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DYESTUFFS MONTHLY SUPPLEMENT: A Review of Mordant Colours, by L. J. Hooley, etc. 17-24

NOTICES:—All communications relating to editorial matter should be addressed to the Editor, who will be pleased to consider articles or contributions dealing with modern chemical developments or suggestions bearing upon the advancement of the chemical industry in this country. Communications relating to advertisements or general matters should be addressed to the Manager.

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The Study of High Pressure Synthesis

THE real significance of the paper on "Syntheses at High Pressures," by Professor G. T. Morgan and his colleagues of the Chemical Research Laboratory at Teddington, presented to the London Section of the Society of Chemical Industry on Monday evening, seems to us to lie, not in the immediate value of the detailed results disclosed, but in the scheme of specialised study and experiment of which the paper represents the first chapter. The Laboratory started without any predetermined programme. It was for the Director to look round and select a good starting-point for definite research. Professor Morgan's selection of "High Pressure Synthesis," or more specifically the interaction of carbon monoxide and hydrogen at high pressures and temperatures, will be generally welcomed; it represents a field already important, but far more important still in its almost limitless possibilities. For the first time we have a disinterested and independent group of experts committed to the study of this subject; they represent no commercial interest; they are engaged in the public service of science and industry; they have no end in view but the acquisition of verified knowledge and experience; whatever results emerge will be national property. Such an enterprise is a notable forward step in our scientific organisation.

The methods are no less sound than the general

idea. Professor Morgan might have taken for granted some ground already covered by other researchers whose work is recorded in the literature of the subject, and begun at a later point. To some of the experts present the ground reviewed in the paper may have been partly familiar, though it was worth while in any case to have it recalled. It was, however, a thoroughly sound policy to begin right at the beginning and work up. Some of the advantages are already clear. A real research "team" has been got together; one felt that all through the paper and the discussion. There is no detail of the plant or the experiments that they have taken on trust; it has all been personally tested by experience. The work done up to the present is essentially their own work, and the results are verified first-hand results. On the engineering side, the staff have learned exactly what was wanted and how to supply it. They might have saved themselves trouble by drawing on the resources of others. They have preferred to find things out for themselves, have gained valuable experience in the process, and now have a sure foundation on which to proceed. It all represents an admirable combination of scientific and empirical methods.

Though the immediate results are not the chief consideration, they are of interest and value. The experiments with different catalysts have brought out various new and important points. The effects of temperature variations are notable. An authentic record of the present and future experiments will be of first-class importance to all investigators. On the engineering side it is creditable to hear that all the plant in use up to now is of British manufacture. Metallurgical firms may note one conclusion, that our present available materials are not always equal to the abnormal strain of modern temperatures and pressures, and realise an opportunity for meeting these new demands, as they have always hitherto done. As a first authentic record of a new scheme of public research in a fascinating field, the paper was of uncommon interest, and Professor Morgan and his staff are to be congratulated on the soundness of their policy.

Protecting the Chemist's Interests

THE address by Professor Smithells, at the fiftieth annual general meeting of the Institute of Chemistry in London last week, sketched briefly the great work of this body in the half-century of its career in organising the profession of chemistry "as well for its own prestige as for the service of the community." That the Institute has not even yet reached the limits of its possible developments is shown by the fact that during the past year the membership has increased by 202 to a total of 5,388 Fellows and Associates. Some difficulty is acknowledged in placing new members, and this has even had the effect in some cases of diverting men to

other professions. This is to be regretted at a time when the employment of chemists in industry is being so strongly urged, but it is still gratifying to hear that the number of members known to be without appointment is less than 2 per cent. of the total.

The main point in the speeches at the B.A.C. London dinner on Saturday evening was the need and duty of protecting the interests of the working chemist. In this matter it was made clear that the Ministry of Labour is in complete sympathy with the Association. It is the policy of the latter body to secure first attention to the claims of unemployed British chemists; it is one of the functions of the former body to decide whether foreign chemists shall be permitted to enter this country to take up appointments. Between the two, while not excluding foreign chemists whose special qualifications may be required for certain posts, something is being done to see that British unemployed chemists have a reasonable chance of securing vacant posts. Another point emphasised was the importance of an even fuller recognition of the chemist's place in industry. The testimony of Mr. Irons that the attitude of industrialists on this point is distinctly improving was confirmed by other speakers, but the willingness of commercial concerns to keep their minds open to new ideas might still be extended with equal advantage to industry and to the chemist. In London, and indeed throughout the country, the Association is working hard to strengthen its membership and organisation, and its concentration on practical objects such as salaries and conditions and on the organisation of benefit funds appears to be producing results.

Sulphuric Acid in India

THE Government of Mysore have been for some years past considering the question of manufacturing sulphuric acid in the State, as well as that of putting up a sulphuric acid plant for the manufacture of acetic acid from grey acetate of lime produced at iron works. At present all the sulphuric acid required in India, believed to be over 20,000 tons, is now manufactured in the country. The Director of Industries has submitted a note and at the last meeting of the Economic Conference Standing Committee, the department was requested to furnish statistics of the sulphuric acid and other chemicals consumed in the State for the manufacture of which sulphuric acid is required. According to trade statistics, the average imports of sulphuric acid into the State varies from 650 to 750 tons per annum. The other chemicals for the manufacture of which sulphuric acid is necessary are superphosphate, aluminium sulphate, copper sulphate, Epsom salt, etc. The total quantity of sulphuric acid required for direct consumption and for manufacture of chemicals now imported into the State is on an average about 6½ tons per day. It is estimated that a capital of about Rs. 1½ lakhs will be required for putting up a plant manufacturing three tons of sulphuric acid a day. The director in his note states that "the technical operations regarding the manufacture of this acid are well understood, and it would be easy to employ experts to erect an up-to-date plant if Government are prepared to pioneer the industry."

Books Received

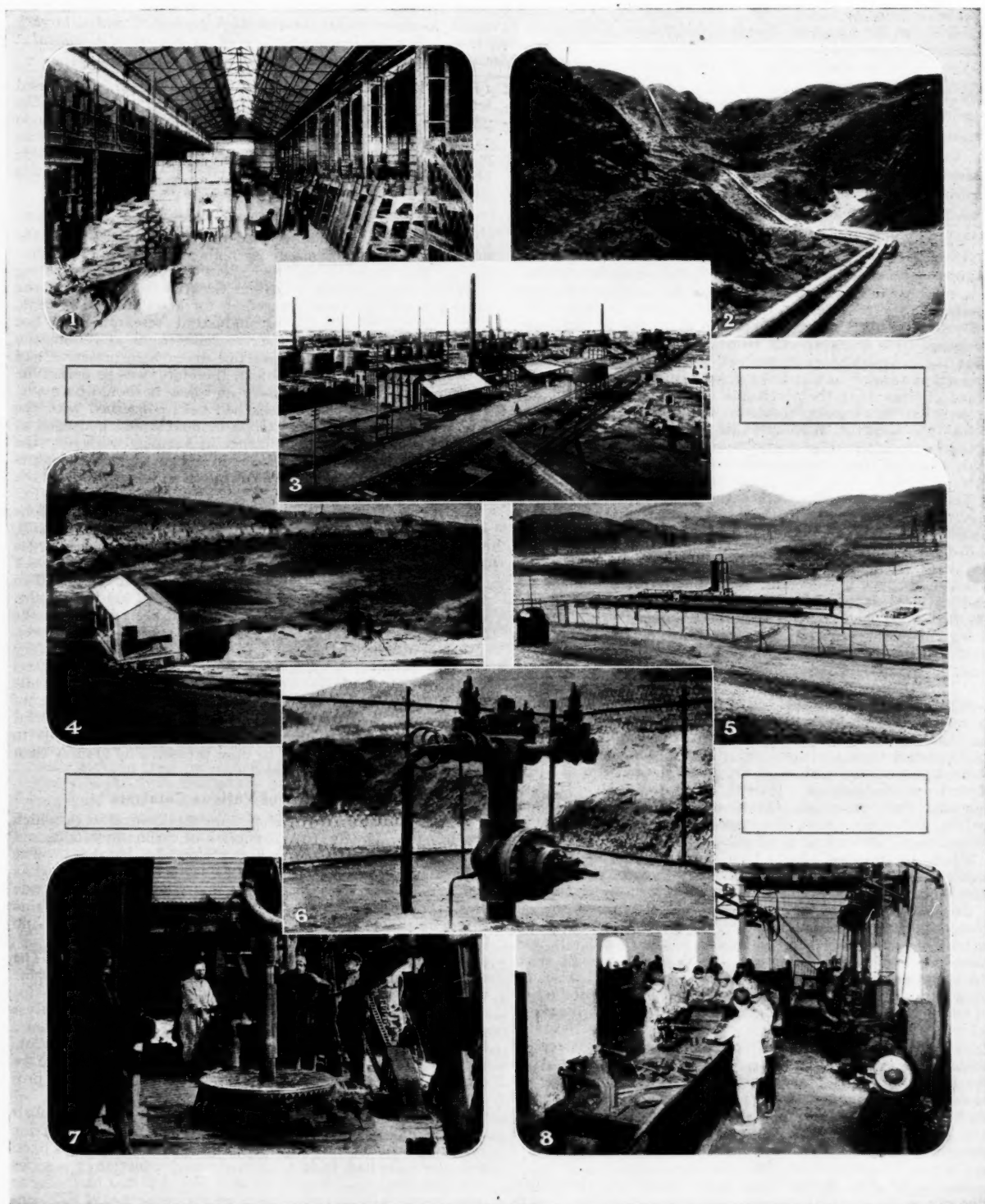
- RADIO ELEMENTS AS INDICATORS AND OTHER SELECTED TOPICS IN INORGANIC CHEMISTRY. By Fritz Paneth. London: McGraw-Hill Publishing Co., Ltd. Pp. 164. 12s. 6d.
- MATHEMATICAL PREPARATION FOR PHYSICAL CHEMISTRY. By Farrington Daniels. London: McGraw-Hill Publishing Co., Ltd. Pp. 308. 15s.
- CHEMICAL ENCYCLOPÆDIA. By C. T. Kingzett. London: Baillière, Tindall and Cox. Pp. 807. 35s.

The Calendar

Mar.		
12	Ceramic Society: "A New Type of Tunnel Kiln Suitable for the Firing of Pottery." J. Williamson. 7.30 p.m.	North Staffordshire Technical College, Stoke-on-Trent.
12	Institute of Chemistry (Leeds Section): "The Expert Witness and the Law of Evidence." H. S. Houldsworth.	University, Leeds.
12	Institute of Metals (Scottish Section): Annual General Meeting. 7.30 p.m.	39, Elmbank Crescent, Glasgow.
13	Institution of Petroleum Technologists: "The Natural Gas of South Persia, Process Development and Exploitation." Lt.-Col. S. J. M. Auld. 5.30 p.m.	John Street, Adelphi, London
13	Institution of the Rubber Industry (London Section): "Scheme of Accelerator Classification." R. P. Dinsmore. 8 p.m.	Storey's Gate, London
14	Institute of Chemistry (Manchester Section): "Absorption Spectrography and some of its applications in Chemistry." J. Twyman.	Royal Exchange Buildings, St. Ann's Square, Manchester
15	Chemical Society 8 p.m.	Burlington House.
15	Institute of Metals (London Section): "High Tensile Bronze." Wesley Lambert. 7.30 p.m.	83, Pall Mall, London.
15	Royal Society: 4.30 p.m.	Burlington House.
16	Royal Institution: "The Quantum and Relativity Theories of Light." Professor E. T. Whittaker. 9 p.m.	21, Albemarle Street, London
16	West Cumberland Society of Chemists and Engineers: "Inventions." Comr. Hawkes. 7 p.m.	Workington.
16	Society of Dyers and Colourists (Manchester Section): Papers.	36, George Street, Manchester.
16	Society of Chemical Industry (Liverpool Section): Annual Meeting.	Liverpool.
19	Artificial Silk Goods Exhibition.	Holland Pk., London.
20	Royal Photographic Society: "Photography and Photometry in X-Ray Crystal Analysis." W. T. Astbury 7 p.m.	35, Russell Square, London
20	Institute of Metals (Birmingham Section): "Non-Ferrous Tubes." W. E. Ballard. 7 p.m.	Engineers' Club, Birmingham.
21	Society of Glass Technology.	Leeds.
22	Institute of Chemistry and Society of Chemical Industry (Edinburgh): "Recent Advances in the Chemistry of Soils." Dr. W. T. H. Williamson. 8 p.m.	36, York Place, Edinburgh.
22	Chemical Society: Anniversary Dinner. 7 p.m.	Hotel Victoria, London.
22	Society of Chemical Industry (Edinburgh Section): Annual General Meeting. 7.30 p.m.	36, York Place, Edinburgh.
23	Society of Chemical Industry (Glasgow Section): Annual Business Meeting. 7 p.m.	39, Elmbank Crescent, Glasgow.
23	Chemical Engineering Group: "The Mechanism of Fractionating Columns." Professor E. C. Williams.	Burlington House, London.
23	Society of Dyers and Colourists (Scottish Section): "Some Features of the Swelling and Solution of Cellulose." A. J. Hall.	
27	Institution of Petroleum Technologists: Annual Meeting. 5.30 p.m.	Royal Society of Arts House, London.
29	Society of Dyers and Colourists (Midlands Section): "Azoic Colours." Professor F. M. Rowe, 7.30 p.m.	University College, Nottingham.

Views of a Persian Oil Field

Taken by permission from J. W. Williamson's new volume, "In a Persian Oil Field," published by Ernest Benn, Ltd. (pp. 189, 7s. 6d.).



1. Drilling Stores at Masjid i Suleiman. 2. The Steepest Section of Pipe-Line over the Imam Raza. 3. Abadan Refinery. 4. Pump House on Slipway at Godar Landar. 5. Gas Separators for Separating the Gas from the Oil as it Flows from the Well. 6. Flowhead of Completed Well, showing Modern High Pressure Fittings. 7. Turn Table and Drill Stem of a Rotary Drilling Rig. 8. Persian Apprentice School at Masjid i Suleiman.

Chemical Research on Syntheses under High Pressure

Work Done at the Chemical Research Laboratory, Teddington

Great interest has been taken in the work which has been proceeding, under the direction of Professor G. T. Morgan, F.R.S., at the Chemical Research Laboratory, Teddington, in regard to chemical reactions at high pressures, and a large audience assembled on Monday to hear an account of the work read before the London Section of the Society of Chemical Industry. A summary of the paper and discussion is given below.

THE meeting at Burlington House, London, on Monday, at which was presented a paper on "Syntheses Under High Pressure," by Professor G. T. Morgan, F.R.S., and Messrs. R. Taylor and T. J. Hedley (all of the Chemical Research Laboratory at Teddington) was (our technical correspondent writes) in the nature of an historic occasion. It had been known for some time that work on reactions at high pressures was proceeding at Teddington, but not until now had the veil which covers all official work of this nature been withdrawn. The degree of interest which this work has aroused was reflected in the large attendance, who listened with keen interest to the proceedings.

One of the most important points in regard to this high-pressure work is its special technique. It is quite certain that the field to be explored will yield a large number of important results, and it is of great importance from every point of view that the technique should be cultivated and understood by as many chemists as possible. For the time being, the work at Teddington is directed towards a careful study of the interaction of carbon monoxide and hydrogen at high pressures and various temperatures, in the presence of catalysts.

The first phase of this work really consisted in overcoming the problems presented in the construction of the necessary plant. This was undoubtedly a very difficult task, which called for a high order of chemical and engineering skill and resource. It is clear from the details of the paper that this phase has come to an end. With purely British materials and products, supplied by Reavells, the Lennox Foundry Co., the British Oxygen Co., the Budenberg Gauge Co., and others, a workmanlike plant has been erected. A Tantiron vessel was used for the production of carbon monoxide from formic acid by the action of sulphuric acid, and the chairman, Mr. W. J. A. Butterfield, pointed out that, apart from the important fact that the metal had resisted corrosion from the acid, it was exceptionally interesting that no formation of iron carbonyl seemed to have been noted. From now on it may be expected that a steady stream of important papers on the subject of the carbon monoxide-hydrogen reaction will flow from Teddington. It was clear from Mr. Taylor's remarks that, as usual, the question of adequate joints, valves, and other points of apparent detail provides most of the "snags" in work of this kind.

Up to the present, efforts have been directed mainly to a weeding-out of catalysts and a general survey of possibilities, but already the production of methanol is well understood.

The discussion indicated how keenly chemists are interested. Incidentally, it was stated by Mr. Taylor that a provisional patent had been taken out in regard to the results. It was, however, left to Dr. Lessing to provide the spiciest note. Speaking of reactions at high pressure, he said that as far back as 1908, when Haber's results in regard to the production of ammonia were first published, he wrote to Haber inquiring whether the latter would be prepared to sell the rights of exploitation of his process in Great Britain. Haber replied that only a few weeks before he had sold the world rights to the Badische Anilin- und Soda-Fabrik. Undismayed by this news, Dr. Lessing made efforts to interest British chemical manufacturers in the process, but nothing was done. Chemical and national history might have been very different, he remarked, had his efforts been attended with more success.

Mr. Taylor, who presented the paper, stated that investigation of reactions at high pressure was begun at Teddington in 1926, the preliminary study being the interactions of carbon monoxide and hydrogen under conditions of high pressure and temperature. In a more detailed reference to previous work on this reaction in the presence of catalysts, it was pointed out how, after the appearance of Patart's patent in

1922 for the production of methanol, the Badische Co. pressed forward investigations, and by 1925 had so far developed the process for the production of synthetic methanol that 500,000 gallons were exported by Germany into the United States in that year. A process for the production of synthetic methanol, which had been worked out at Billingham, was shortly to be placed on a manufacturing basis.

Special Technique Necessary

A very special technique was, however, necessary for the investigation of reactions under high pressures and temperatures. The Badische Co. had spent 20 years in perfecting their ammonia process, whilst in Great Britain work on the same process had been proceeding for about half that time. The information gained by industrial research was not generally available, and in the researches begun at Teddington a special knowledge of gas practice under high pressures had to be acquired. The first object, therefore, was to determine the type of apparatus necessary and how it should be made. The chemical side of the work had been concerned with the interaction of mixtures of carbon monoxide and hydrogen at high pressures under the influence of various catalysts; the synthesis of methanol had been investigated, and attempts had been made to modify the catalyst so as to produce the higher alcohols.

Mr. Taylor then dealt with the plant for high-pressure work which has been installed at Teddington. It included, he said, three large gasholders for nominal pressure, and others for gas compressed up to 300 atmospheres. There was a Reavell three-stage compressor, going up to 300 atmospheres, and in addition a four-stage compressor by Hofer, of Mülheim-Ruhr. Up to the present nearly all the work had been done with the first-named compressor. All the valves now in use had been supplied by the British Oxygen Co. The Lennox Foundry Co. had supplied a circulating pump, as well as two steel receivers for use in connection with the compressor, while gauges had been supplied by the Budenberg Gauge Co., of Manchester. The work was being done with a copper-lined vessel. The plant available would permit of work up to 1,500 atmospheres, but up to now pressures no greater than 200 atmospheres had been used.

Investigation of Various Catalysts

Then followed an account of the experimental work which was in hand, namely, the interaction of carbon monoxide and hydrogen under pressure in the presence of catalysts. The following were a few of the materials which had been used as catalysts:—Zinc oxide, zinc dust and zinc oxide, zinc oxide plus copper oxide, zinc oxide plus uranium oxide, zinc chromate ($\text{ZnO} \cdot \text{CrO}_3$); basic zinc chromate ($3 \text{ ZnO} \cdot \text{CrO}_3$); and basic zinc chromate, plus various additions. From the preliminary experiments it was possible to forecast that: (1) the catalyst prepared from basic zinc chromate or normal zinc chromate would probably prove an efficient catalyst for methanol syntheses; (2) that the temperature of the catalyst should lie between 350° and 400°C .; and (3) that a pressure of the order of 200 atmospheres should give a reasonable output. Subsequent experiments proved these views to be correct, and a good deal of work had been done on the production of methanol.

It was then considered probable that the addition of cobalt to an alcohol-producing catalyst might lead to the production of higher alcohols. The catalyst from cobalt nitrate and basic zinc chromate had, in fact, effected the production of a series of higher alcohols. Methyl alcohol was obtained at the same time, and in all the experiments so far performed it still constituted the major proportion of the product, which contained small amounts of aldehydes. The products were fractionally distilled in order to determine the proportion of methyl to higher alcohols. For instance, at 400°C ., using a catalyst consisting of basic zinc chromate and 10 per cent. of cobalt

chromate, there was 82 per cent. of methyl alcohol and 9 per cent. of higher alcohols. At 450° C. the methyl alcohol was 90 per cent. and the higher alcohols 1.6 per cent., whilst with 5 per cent. cobalt chromate the figures were 88.5 per cent. and 5 per cent. respectively.

Some Experimental Results

Experiments with a catalyst made from a mixture of 2 parts of cobalt nitrate, 1 part of zinc manganate and 0.7 parts of copper carbonate gave 1.4 per cent. aldehydes, 79.7 per cent. of methyl alcohol, 11.6 per cent. of ethyl alcohol, and 7.3 per cent. of higher alcohols. A catalyst made of a mixture of 10 parts of zinc oxide, 20 parts of chromic acid, 60 parts of cobalt nitrate and 10 parts of copper carbonate gave 77 per cent. methyl alcohol, 20.3 per cent. of ethyl alcohol, and 2.7 per cent. of higher alcohols.

The results of the experiments referred to were summarised as follows: (1) Primary alcohols only had been identified; (2) aldehydes found in the product corresponded with the alcohols present; (3) increase in percentage of cobalt in the catalyst favoured the production of alcohols other than methyl alcohol; and (4) rise of temperature increased the proportion of methyl alcohol.

The facts so far observed might be explained on the hypothesis that the primary product of the reaction between carbon monoxide and hydrogen at high pressure, in the presence of such a catalyst as zinc chromate, was formaldehyde, which might react in either of two ways: (1) It may be further hydrogenated, in which case methyl alcohol was formed; or (2) it might undergo an aldol condensation with the subsequent formation of aldehydes containing two or more carbon atoms. Any of the other aldehydes so produced might react in a like manner, either to produce the corresponding alcohols or to undergo further condensation. Finally, the paper dealt with the physico-chemical aspect of the reaction between hydrogen and carbon monoxide, and the methanol equilibrium constants calculated from both Audibert's and Kelly's equations for various temperatures were given.

Professor Morgan's Remarks

Professor G. T. Morgan, who next addressed the meeting, mentioned that although there was at Teddington a Hofer compressor, it had not been much used yet, and the whole of the plant actually used in the experiments up to date was of British manufacture and the product of British chemical engineers. Further, he added that the experimental work being carried out was only possible through the splendid team spirit shown, and there were many engaged in the investigations whose names were not mentioned in the paper. Professor Morgan then proceeded to deal in some detail with the theory of the formation of the products obtained from carbon monoxide and hydrogen, and especially the possibilities arising from the intermediate formation of formaldehyde, its reduction or aldol condensation, and the reduction or condensation of the products of its aldol condensation.

Tributes to the Work

In the subsequent discussion a number of leading chemists and chemical engineers took part. Mr. F. H. Carr (president of the Society of Chemical Industry) said it was an achievement in the short space of two years to have overcome the initial difficulties in the way of packings, joints, etc., which always took such a long time in this class of experimental work. He regarded these investigations as indicating an immense future for applied chemistry, and it was an instance of the value of well organised research under competent supervision. Mr. Taylor, in answer to a question, said that the processes which had been evolved were covered by provisional patents.

Professor J. W. Hinchley, in adding his congratulations to those of Mr. Carr, said that some of the points raised by Mr. Taylor in his description of the Teddington plant were reminiscent of problems which had arisen in the use of high-pressure boilers. Dr. R. Lessing and Mr. J. L. Baker also joined in the discussion, the latter pointing out that the work on the interaction of carbon monoxide and hydrogen to form more complex compounds was the converse of certain biochemical reactions in which complex compounds were broken down into simpler ones.

At the end of the proceedings, a cordial vote of thanks to the authors of the paper was carried.

A Bookman's Column

THE volume *In a Persian Oil Field*, by J. W. Williamson, B.Sc. (Secretary of the British Scientific Instrument Research Association), just published by E. Benn, Ltd. (7s. 6d.) is an extremely interesting study in the scientific and industrial development of the Eastern oil industry. Apart from the account of the engineering problems involved, chemists will be particularly interested in the emphasis on the importance of research and the large part it has played in the opening up of these great oil bearing properties. This is a book of interest to the layman, as well as to the oil technician. Some illustrations appear on p. 215.

The fourth edition of Kingzett's *Chemical Encyclopædia* (Balliere, Tyndall and Cox, pp. 807, 35s.) will be welcomed by all interested in chemical studies or concerned in chemical industry. It has been considerably enlarged, containing some 200 pages more than the previous edition. The information, without extending into long articles, is usually full enough to give a good idea of the subject, and care seems to have been taken to bring it as nearly as possible up to date. As a test, we have looked up a number of recent trade names, such as "Prodorite," "Monax," etc., and have found everyone we could think of included. Mr. Kingzett, who began this important work during the war years, has done a service by which his name will long be remembered.

The Basic Industries of Great Britain (Ernest Benn, Ltd., pp. 390, 25s.), by Lord Aberconway, is a volume of first-rate industrial and economic importance. It supplies a historical and economic survey of the evolution of our basic industries of coal, iron, steel, engineering, and ships, and a picture of their operations to-day, together with much valuable statistical information. In the concluding chapter, "A summary of the situation and some economic conclusions," the author discloses his own view of the present conditions in British industry. Chemists will note with approval his insistence on science, especially industrial chemistry, being linked up with our national industries, and his warning against the example of those British manufacturers of over half a century ago who, under the influence of their past successes and possessed of a money-making but obsolescent or even obsolete plant, turned a deaf ear to the claims of science and industrial reform.

The centenary addresses delivered in connection with the centenary celebrations of the University of London (University of London Press, Ltd., 12s. 6d.), were well worth collecting together, since they have both an historical and a current value. Many will be glad to have them available for the bookshelf not only for the intrinsic interest of their matter but as a memorial of a great educational occasion.

The increasing public interest in the future of our coal industry probably partly explains the issue by E. Arnold and Co. of a revised and enlarged edition of *Coal in Great Britain* (pp. 334, 21s.), by Walcot Gibson, D.Sc., F.R.S. The author does not, of course, invade the economic sphere of the industry nor concern himself with its fierce controversies. He confines himself as a scientist to the composition, structure, and resources of our coalfields, dealing first with the general principles of the geology of coal and coal-mining, and in the later chapters with the characteristics of the separate coal-fields of the United Kingdom.

Professor Alexander Findlay's well-known book on *The Phase Rule and Its Applications*, published by Longmans, Green and Co., in their series of text books on physical chemistry, now appears in its sixth edition, revised and very largely re-written (pp. 326, 10s. 6d.). The changes made affect, more especially, the chapters on the equilibria of one or two component systems. The sections dealing with three and four components have been revised and brought up to date, and a new chapter on the practical applications of equilibrium diagrams has been added. This chapter illustrates the practical application of the Phase Rule to the study of three-component systems formed by water and two salts with a common ion, and the use of equilibrium (solubility) diagrams as a guide to the practical winning of salts by crystallisation from solution.

Jubilee Annual Meeting of the Institute of Chemistry

Professor Smithell's Review of Progress

A feature of the fiftieth annual general meeting of the Institute of Chemistry, held on March 1, was a review by the President (Professor Smithells), read in his absence by Mr. E. Richards Bolton, of the progress of the Institute and of chemical science, with some notes on current problems.

THE fiftieth annual general meeting of the Institute of Chemistry was held at the Institute, Russell Square, London on Thursday, March 1, Mr. E. Richards Bolton (vice-president) presiding in the unavoidable absence of Professor Arthur Smithells, the President.

In moving the adoption of the Report of the Council, Mr. Bolton read an address from the President in which (referring to the recent jubilee celebrations of the Institute) he said that it would enter upon its second half-century with the prestige of a fully acknowledged national institution. He emphasised the importance of the loyal co-operation of all the members, in whatever branch of the profession they might be engaged, in order to promote, by the only really effective means, the complete and solid organisation of the profession of chemistry, as well for its own prestige as for the service of the community. During the past twelve months, the membership had increased by 202 to a total of 5,388 fellows and associates. There had been some difficulty in placing newly qualified members, and there had been a certain tendency for them to turn to other careers; but it was a good thing that men of science should be diffused among the practitioners of other professions and in the business world. The number of members known to be without appointment, however, was less than 2 per cent.

The Associateship of the Institute did not constitute merely an additional diploma obtainable by those who had reached a certain standard of knowledge and obtained certain qualifications, but it was a recognition by the responsible professional body that the graduate was competent and, as an individual, was personally acceptable to the profession as a whole. By his adherence to a definite code of professional ethics he should, moreover, be acceptable to prospective employers, and to the community generally, as one who stood for the highest ideals of the professional man.

Education of the Chemist

A great many things had happened during the war, and a great many things had happened since, to direct attention to the education of the chemist. The science itself had not only grown abundantly in these years, but it had been subject to great changes. Special branches of chemistry, pure and applied, had been stirred to luxuriant growth, and the part which chemistry had to play in human affairs was constantly enlarged. The determination to keep our country leading in chemical industry was evident from recent developments among its greatest manufacturing concerns, from the forward policy they were adopting in the promotion of research, and from their employment of highly trained scientific staffs. These things had created an unprecedented stir in the centres of chemical education.

He was not satisfied that the training of the university chemical student was, generally speaking, all that it should be: he felt particularly alarmed by the increasing burden of memorised intellectual matter—he would not call it knowledge—which the student had usually to carry to the examination room. It was necessary to review the degree system and he thought that the time had come for an exchange of opinions on the subject. At one end of the university curricula lay the school course, and at the other end, in some cases at least, the chance of a further period of preparation from which much might be acquired that would help the young chemist to orient himself in industrial life. He hoped, therefore, that the Institute would be able to convene a conference in the near future to consider generally the education of the chemist. They did not want to stereotype chemical curricula, but they might well combine in getting rid of difficulties and in improving their ways.

Recognition of Professional Services

The President also referred to the representations which had been made by the Institute to public authorities in order to bring about a better realisation of the value and importance

of professional chemical services. It was especially difficult to induce public authorities to understand the aims of, and the responsibility involved in, those branches of work, such as the protection of the food and water supplies of the community, and the regular examination of the gas supply, for the benefits derived from this work were not directly obvious. Yet such services were essential to the public welfare, and the result of neglecting to take advantage of them might at any time be disastrous. The Institute protested against the ignorance which prevailed in these matters and the shortsightedness which, by imposing mean conditions on public chemical appointments, prevented the full use being made of the services which the profession could render. There was, in too many quarters, evidence of the same shortsightedness on the part of employers who did not always realise that if they were to secure men who were to work with their brains and be able to give their best, means must be allowed for life at a reasonable standard of comfort.

Referring to the activities of the local sections of the Institute, the President said that their existence in the principal centres throughout the country made the corporate life of the profession more real, and it had been a great satisfaction to the Council to note that their meetings during the past year, held independently or jointly with other bodies, had been remarkable for the number of really valuable papers which had been contributed and the useful discussions which had been held.

In conclusion, he expressed his appreciation of the services rendered by the officers and members of Council and by the honorary officers and committees of the Sections.

Next Year's Officers

The officers and members of Council for the ensuing year were elected as follows:—

President.—Professor Arthur Smithells.

Vice-Presidents.—Mr. Arthur J. Chapman, Dr. Harold G. Colman, Mr. Ernest M. Hawkins, Professor G. G. Henderson, Dr. Robert H. Pickard, and Professor J. F. Thorpe.

Hon. Treasurer.—Mr. Patrick H. Kirkaldy.

Members of Council.—Dr. T. Lewis Bailey, Professor A. A. Boon, Dr. P. E. Bowles, Dr. F. D. Chattaway, Dr. G. C. Clayton, M.P., Dr. William Clayton, Professor J. W. Cobb, Mr. W. H. Coleman, Dr. R. T. Colgate, Dr. Frankland Dent, Professor J. C. Drummond, Dr. Bernard Dyer, Mr. G. D. Elsdon, Mr. F. G. Edmed, Mr. Lewis Eynon, Mr. A. G. Francis, Dr. W. H. Gibson, Mr. C. M. W. Grieb, Mr. Edward Hinks, Dr. H. H. Hodgson, Mr. Bernard F. Howard, Professor C. K. Ingold, Mr. A. W. Knapp, Dr. D. W. Kent-Jones, Dr. L. H. Lampitt, Dr. A. G. G. Leonard, Mr. William Marshall, Mr. B. G. McLellan, Mr. C. Ainsworth Mitchell, Mr. H. E. Monk, Mr. L. G. Radcliffe, Dr. Alfred Rees, Dr. E. K. Rideal, Mr. P. W. Tainsh, Dr. D. F. Twiss, Mr. Oliver Trigger, Mr. J. H. Totton, Mr. J. Adam Watson, and Mr. A. W. M. Wintle.

British Association President for 1928-29

THE council of the British Association will nominate Sir Thomas Holland, rector of the Imperial College of Science and Technology, as president of the Association for the meeting in South Africa in July and August, 1929. Sir Thomas Holland succeeded Sir Alfred Keogh in 1922 as rector of the Imperial College, of which he was an old student. He joined the Indian Geological Service in 1890, and was appointed professor of geology and mineralogy in the Presidency College, Calcutta, three years later. From 1903 to 1909 he was director of the geological survey of the peninsula. Returning to England, he was for nine years professor of geology and mineralogy in the University of Manchester. Mr. O. J. R. Howarth, secretary of the British Association, expects to proceed to South Africa in May next to confer with the authorities there on arrangements for the meeting.

Defining a Policy for Working Chemists

The Problem of Alien Scientific Labour

In the speeches at the annual dinner of the London Section of the B.A.C., reference was made to the co-operation with the Ministry of Labour in restricting alien immigration, to the Association's work in assisting working chemists, and to the advantages of organising one general body of chemists.

PROFESSOR G. T. MORGAN presided over the seventh annual dinner of the London Section of the British Association of Chemists, held at the Engineers' Club on Saturday, March 3. There was a good attendance. Letters of regret were received from Dr. E. F. Armstrong, Mr. C. S. Garland, Professor Drummond, Dr. Longstaff, and others.

Proposing the toast of "The Profession," Mr. James Stewart stated that the Archbishop of Canterbury had recently deplored the lack of the outstanding personalities of 40 years ago, but in science they could claim that they had as many eminent men as ever, and that their work was as important as any ever achieved, though many people doubted, considering the self-sacrifice a scientific career involved, whether they received their adequate reward. It was a habit to take people at their own valuation, and an association such as theirs, while developing their powers to the fullest extent, might evolve some scheme for securing that the chemist's reward should be commensurate with his labours.

Dr. Haas, who replied, remarked that whatever was wrong with the profession of chemistry, there was nothing wrong with the science.

The B.A.C. and Ministry of Labour

Professor Hinchley, who (in the absence of Mr. S. Reginald Price) proposed "The Ministry of Labour," congratulated the association on its continued progress. People were now coming to feel that in the world of labour there were duties as well as rights. While some thought all government interference a mistake, others realised that one's own liberties could be extended by the limitation of other people's license, and the B.A.C. had been doing valuable work in conjunction with the Ministry of Labour in limiting indiscriminate alien immigration. The view that the Government had nothing to do with trade was rubbish, and he was grateful for the help the Association had received from the Ministry of Labour in their efforts to protect the interests of British chemists. (Hear, hear.)

Mr. G. W. Irons, who responded on behalf of the Ministry, said that some people might wonder why the Association had any relations at all with the Ministry of Labour. To begin with, their interests coincided respecting the immigration of alien labour. It was the law in this country that no employer could bring in an alien analyst, for example, without the permission of the Ministry of Labour. It was his experience that every employer took off his hat to the principle, but desired himself to be the exception. The Ministry staff were not chemists, but they had to decide whether Mr. X or Mr. Y should be brought in to perform this or that part in a chemical laboratory, and it was their practice to consult the appropriate association. When an employer asked to bring in an alien chemist in connection with a new industry or the development of a new process in some existing industry, they were fortunate in being able to approach the B.A.C. for first hand advice, and he was there to testify to the value of the counsel and assistance they had received, both from the council and from the energetic secretary. (Applause.) The Ministry, again, were charged in conjunction with the Board of Trade to watch trade developments and to inquire how industry could be helped. There were signs that things were improving, not rapidly, but gradually (hear, hear), and there was one improvement to which he ought to pay tribute. Before the war it was the custom to hear that British manufacturers were case-hardened in their processes and methods, and thought that what was good enough for their forefathers was good enough for them. To-day one of the most hopeful signs was that British manufacturers were looking more to the works chemists than ever before. In the past we had lost processes, patents, and developments because our manufacturers went on their own way, but to-day leaders of industry were far more inclined to rely on the chemist and the technician. He hoped that the Association would continue to take a leading part in that development.

A League of Chemists

Proposing the "London Section," Mr. H. T. F. Rhodes spoke in detail of the valuable work of the chemist in such fields as criminology and forgery, and referring to lead tetraethyl approved the decision of Sir A. Chamberlain to set up a committee of inquiry to determine the extent of any dangerous properties it might possess. Such a committee, he suggested, should consist of representatives of the Chemical Society, the Society of Chemical Industry, the Institute of Chemistry, the B.A.C., the Association of Scientific Workers, and the Medical Research Council, and might be trusted to do all that was necessary to safeguard the public.

Mr. A. J. C. Cosbie, who responded, emphasised the point that the B.A.C. was a real live body, which did not trouble about academical questions of status, but sought to look after the "chemist in the street," and to help him to a better valuation of himself. It was regrettable that the chemical profession was split up into so many separate units, and they hoped that ultimately every chemist would be enrolled in one society or league of chemists. Such a league would be a very useful corollary to the League of Nations. If they could get an enormous chemical combine of that kind, the chances of another war would be considerably lessened. The last war was an engineer's war; the next would be a chemist's war. If they were all banded together they could appreciably diminish the prospects of such a catastrophe. (Applause.)

Practical Benefits for Working Chemists

Replying to the toast of "The President," proposed by Mr. F. Bridge, Professor Morgan said he agreed with Mr. Cosbie that the function of that association was to attend to the practical welfare of chemists, and it was gratifying to know of its continued success in that direction. The association had a membership of 1,100, which was more than the Institute enrolled in the same period, and one of its greatest achievements had been the distribution of over £4,000 in benefits. (Applause.) They felt it would be better if all chemists could belong to one society, but there were obvious difficulties. The Institute and the association worked in harmony together, but sooner or later some sort of co-ordination would have to take place. It would certainly be a boon to the younger chemist if he could pay one subscription instead of several to different bodies. It was sometimes suggested that they could improve matters by associating themselves with other scientific professions and forming one great body. That appealed to some minds; it suggested the possibility of a general strike and bringing the whole system to a standstill. (Laughter.) As chemists, however, they wanted a register, and aimed at occupying the same position that some of the older professions did. A good deal of opposition might be expected from those already registered. They were proud to regard the association as a kind of Fascist wing of the chemical profession and gratified by the work it had done in showing the way. He cordially hoped it might continue to flourish and prosper.

Other toasts were "Our Guests," proposed by Mr. H. M. Morgan, and responded to by Dr. Dunstan; and "The Ladies," proposed by Mr. E. R. Redgrove, and responded to by Miss Wright (chairman of the London Section). The guests were entertained by songs, recitals, etc., contributed by Mr. L. Fleck, Mrs. Rhodes, Mr. E. R. Redgrove, Mr. R. J. Fleet, and Miss Dunford.

"The 80th Milestone"

UNDER the title of "The 80th Milestone," a little booklet has been issued by Smith Brothers and Co. (Hyson), Ltd., engineers and ironfounders, of Nottingham, to commemorate the attainment of the eightieth year of the firm's existence. The firm, as is pointed out, was founded by Sydney Smith, the inventor and maker of the first steam pressure gauge, and on this account alone the booklet should prove of interest to power plant engineers.

Potentiometric Analysis in Industry

A Paper Before Manchester Section of S.C.I.

At a meeting of the Manchester Section of the Society of Chemical Industry held on Friday, March 2, a paper entitled "Some Industrial Applications of Potentiometric and Conductometric Methods of Analysis," by Dr. T. Callan and Mr. S. Horrobin, was read by the first-named author. Mr. L. Guy Radcliffe presided.

It was stated in the paper that while it was recognised that electrometric methods existed for determining the end point in oxidation, reduction, acidimetric and precipitation methods of volumetric analysis, these were regarded by the majority of analysts and technical chemists as being more of theoretical than of practical interest, and it was often considered that special training and technique were required which ruled them out as practical methods. The authors showed, however, that electrometric methods could in many cases be so simplified as to afford not only more reliable, but more accurate and more rapid methods than the ordinary methods of volumetric analysis, particularly where the presence of colour made the usual indicator methods difficult to carry out, the use of elaborate and expensive apparatus being unnecessary.

Use of End Point Cells

In the case of potentiometric methods the potentiometer itself could often be dispensed with by the use of end point cells, so-called "bottled end points," having potentials equal to that of an electrode in the solution titrated at the end point, a galvanometer only being required, the end point of the titration being when no deflection was shown on the galvanometer. The preparation of a number of these end point cells was described, including cells for acid-alkali titrations, for titrations by means of titanous salts, for titrations by means of potassium bromate, and for titrations of halides.

Examples of titrations using such cells were given, including the determination of sodium carbonate and free acid in dyestuffs, the analysis of nitro bodies and azo colours by means of titanous chloride, the estimation of aniline, toluidine, phenol, etc., by means of potassium bromate, and the estimation of sodium chloride in coloured solutions such as dyestuffs. Conductometric methods of analysis which up to the present had received little attention were also described, and an account was given of an investigation into the application of the thermionic valve to such measurements, as a result of which the most suitable type of valve and the best conditions of grid bias, anode potential, etc., were ascertained.

A New Form of Conductometric Apparatus

An entirely new form of apparatus for conductometric analysis was described. This consisted of a transformer, the primary of which was connected to A.C. lighting current and the secondary through a suitable resistance to a conductometric cell, the alternating current passing across the latter being rectified by means of a crystal detector and then measured on a milli-voltmeter. A number of applications of the apparatus were described, such as the determination of sulphate by means of barium chloride, titrations of bases such as pyridine, etc.

This simplified form of conductometric apparatus allowed of conductometric titrations being carried out with as much ease as potentiometric measurements, the cheapness of the apparatus and ease of carrying out the determinations being such as made the methods suitable for use in routine analysis.

Success of the Birmingham Section of the B.I.F.

THE British Industries Fair held at Birmingham was a great success. It was stated officially that consideration is to be given to the enlargement of the buildings of the exhibition. From inquiries already made in regard to the next fair, it is clear that more space than ever will be required, and a lease of fifteen acres of land has been secured by the Fair Management Committee from the Birmingham Corporation. In addition to home and Imperial buyers, the Fair at Birmingham was visited by four delegations from Germany, and also by delegations from Russia, Austria, the Levant, Mexico, the United States, South America, and other countries. On the metallurgical side, the makers of stainless and rustless irons and steel expressed themselves as satisfied with the result. On the last day a large firm of non-ferrous metal manufacturers took a single order amounting to £12,000.

Testing Calcium Carbide

Interesting Discussion of Standard Methods

At a meeting of the British Acetylene and Welding Association, held at the Old Colony Club, Leadenhall Street, London, on Thursday, February 23, Mr. A. Stephenson (of Allen Liveridge, Ltd.) read a paper on methods of testing calcium carbide, this being a sequel to a previous paper on the subject which he read before the Association a year ago. Mr. Alexander Jackson (president of the Association) presided. In his previous paper Mr. Stephenson discussed various types of calcium carbide testing apparatus without stating any preference or criticising their construction. In this second paper, however, he subjected them to a more critical analysis, with a view to picking out their good and bad qualities, and by a judicious combination of the more desirable features to try and arrive at the basis of some standard form of apparatus and method of testing which would combine convenience and facility in handling with that degree of accuracy which the Association had always considered to be of primary importance in the just and equitable application of its regulations as a basis for commercial contracts.

Mr. Stephenson made the following suggestions: That the standard form of testing apparatus for determining gas yield could be either of the gravimetric or volumetric types, both of which could give accuracies within the errors allowed by the regulations; that where accuracy was preferable to speed the gravimetric method offered an advantage; and that for routine testing and rapid estimation the volumetric type of apparatus was to be preferred, but the meter, and not the gasholder, should be the means of measuring the gas.

Chemical Manager's Thefts: Hard Labour Sentence

At North London Police Court on Thursday, February 23, a sentence of four months' hard labour was passed on William Alfred Conollay, aged 41, described as a departmental manager, of Osborne Road, Forest Gate, who was charged on remand with stealing £35 10s. 2d., the money of his employers, W. J. Bush and Co., Ltd., chemical manufacturers, of Hackney. Mr. L. A. Byrne, appeared for the prosecution; Mr. C. V. Young defended.

Mr. Byrne explained that the accused was the manager of the export department at a salary of £500 a year. He had the assistance of four or five clerks, and it was part of his duty to see that certain fees were paid to foreign consuls in connection with the exportation of goods. His practice was to make out a slip stating the amount of the fee, get it initialled by the general manager, and draw the money from the cashier. As implicit trust had been reposed in the accused no questions were asked. The money should, however, have been paid by cheque. When an investigation was made it was clear that most of these cash payments were on imaginary consignments of goods. The investigation disclosed a deficiency of over £1,100. That amount had been taken since 1924. They were unable to say whether there were any cases earlier, because the records had been destroyed.

Mr. Young said that the prisoner, in pleading guilty, threw himself on the mercy of the prosecutors and the court. He had been living beyond his means.

Mr. Snell, the magistrate, stated that he would comply with the request of the prosecution that the matter should be dealt with at once, and passed sentence as recorded, saying that had the case gone before a higher court the prisoner might have received a long term of imprisonment.

Registration of Chemists in South Africa

A DEPUTATION recently waited on the South African Minister of Agriculture and placed before him the views of the South African Chemical Institute in connection with the promotion of a Government Bill for the registration of chemists in private practice. General Kemp held out no hope of the Government putting forward legislation of this nature, and advised the Institute to proceed by means of a private Bill, promising the advice and assistance of his Department on any draft put forward. This matter is receiving the attention of the Council of the Institute. It is realised that the promotion of a private Bill is beyond the financial resources of the Institute, but it is considered advisable that a draft should be prepared, so that no delay may take place should circumstances become more favourable.

"C.A." Queries

We receive so many inquiries from readers as to technical, industrial, and other points, that we have decided to make a selection for publication. In cases where the answers are of general interest, they will be published; in others, the answers will simply be passed on to the inquirers. Readers are invited to supply information on the subjects of the queries:—

91.—*Thefts from Gas Meters*.—A gas manager writes:—"Recently, three cases of theft from prepayment meters have occurred in our area of supply, the amounts stolen being 1s. 2d. 8s. 11d., and 8s. 11d. respectively. The thief has not been found. (a) It is desired to know whether the tenants of the houses in question are liable to my company for the amounts named, or whether it is not recoverable from them. (b) Is the money our property as soon as it is put into the meter or not until removed therefrom by us? (c) Is the consumer responsible for such money until collected by the company?"

92.—*Sodium Silicate for Concrete*.—A Leeds firm writes:—"I have noticed on several occasions references to the use of sodium silicate as a further treatment to concrete. I should be glad if you could put me in touch with manufacturers of a suitable silicate for this purpose."

Replies

91.—*Thefts from Gas Meters*.—The answer to the questions depend on the terms of the agreements signed by the consumers in respect of the meters referred to, but in the absence of specific agreements it might be argued that payment into a meter provided by the company is in principle identical with payment to a personal collector employed by the company. Such a payment is recognised by the company to the extent that it actually liberates the supply of gas covered by the payment. The subject is dealt with at some length on pages 193 and 194 of Michael and Will, on the Law Relating to Gas and Water (Gas Volume) 1924 edition, from which it would appear that in the absence of neglect on the part of the consumer and of a clause in the agreement holding the consumer responsible for any deficiency, the gas company may have a difficulty in recovering the money. We do not know whether there is any special clause dealing with prepayment meters in the Act authorising the undertaking, but Section 20 of the Gasworks Clauses Act, 1871, provides:—"The register of the meter shall be *prima facie* evidence of the quantity of gas consumed, and in respect of which any rent is charged and sought to be recovered by the undertakers. Provided always that if the undertakers and the consumer differ as to the quantity consumed such difference may be determined upon the application of either party by two justices who may also order by which of the parties the costs of the proceedings before them shall be paid and the decision of the justices shall be final and binding on all parties."

92.—*Sodium Silicate for Concrete*.—Brunner Mond and Co., Ltd., Northwich, have for some time been producing a special brand of silicate of soda for the hardening of cements.

Artificial Silk Developments

TWENTY-ONE acres of land on the Colwick Estates, Nottingham, have been purchased for the erection thereon of an artificial silk factory by a company to be known as the Union Artificial Silk Co., with Sir Ernest Jardine as chairman, and Mr. F. M. Verstynen, of Arnhem, Holland, as managing director. Viscose silk will be produced.

A circular issued by the International Artificial Silk Co., Ltd., states that the installation of additional machinery and plant is being proceeded with, and it is anticipated that at an early date the Aubenton mill, which is equipped to manufacture artificial silk by the viscose process, will be producing its capacity output. It has been decided to devote the new Clairoix mill to manufacture by the acetate process.

From Paisley it is reported that J. and P. Coats, Ltd., have been experimenting with artificial silk thread and, it is stated, have perfected an entirely new product. A special department has been set aside for its manufacture.

Courtaulds, Ltd., state in their annual report that the Wolverhampton factory came into full production last July, and the plant is to be duplicated by the early autumn. The Canadian factory is running at full output, and an extension is coming into production. Favourable reports are given of the Cologne factory (Courtaulds-Glanzstoff).

Chemical Matters in Parliament**The Dead Sea Salts Concession**

In a reply to Col. Howard-Bury (House of Commons, February 27), Mr. Amery stated that he had received representations from the Executive Committee of the Palestine Arab Congress advocating the exploitation of the Dead Sea salts by the Palestine and Transjordan Governments instead of by private enterprise. They were informed that in view of the highly technical nature of the undertaking it was not one which could properly be worked by the Government. The concession had not been given to Mr. Novomeysky as suggested in the question, but negotiations had been entered into for arranging the terms of a lease for the working of the salts by Major Tulloch and Mr. Novomeysky jointly, regarding whom Mr. Amery stated that as far as technical qualifications were concerned very satisfactory reports had been received. Negotiations were still being continued to make sure they had all the other business qualifications.

Ethyl Spirit

Mr. N. Chamberlain, in reply to Lieut.-Colonel Howard-Bury (House of Commons, March 1), said that he proposed to set up a Committee of Inquiry regarding the new motor spirit called ethyl. Declining to prohibit the use of ethyl until the Committee had put forward its results, Mr. Chamberlain added: The information which comes to me does not warrant the statement that there are great dangers. Up to the present, no case of poisoning has been recorded in this country.

Transport of Petroleum

Lieut.-Colonel Sir Vivian Henderson (House of Commons, March 6) moved the second reading of the Petroleum (Amendment) Bill, a measure, he explained, intended to clear up certain obscurities of draftsmanship in the 1871 Act and empower canal companies to make by-laws for the regulation of transport of petroleum. The bill was read a second time without a division.

Awards to Inventors: Commission's Fifth Report

THE Royal Commission on Awards to Inventors has issued its fifth report, dated December 31, 1927. Mr. A. Chaston Chapman, F.R.S., is a member of the Commission. Among the awards mentioned in the present report are the following: To Lieut.-Colonel J. T. C. Moore-Brabazon, of L. and N. Coal Distillation, £600, for a claim in regard to aircraft cameras; to Mr. C. E. Stuart and Mr. H. Lovelock, £1,200, for a claim in regard to the electrodeposition of iron; to Monsieur A. E. A. Dagory, £3,500, for a claim in regard to methods of decoppering guns; to Colonel Sir F. L. Nathan and Sir Robert Robertson, F.R.S., Government Chemist, £500, for a claim in regard to improvements in and relating to explosives. The Commission declined to make an award in the case of a claim by Viscount Chetwynd in regard to improvements in the manufacture of amatol and in the filling of H.E. shell. The Commission met in London on Monday, and awarded £200 to Monsieur L. Lumiere and others in respect of catalytic heating lamps. Over 45,000 of these were used by the British during the war to enable motor engines to be started more easily.

Appointments Vacant

A Chemist for research work for the improvement of mine rescue apparatus, at Leeds, under the Safety in Mines Research Board.—The Under-Secretary for Mines, Establishment Branch, Mines Department, Dean Stanley Street, London, S.W.1. March 10.

A Biochemist for the Forest Research Institute, Dehra Dun, India.—The Secretary to the High Commissioner for India, General Department, 42, Grosvenor Gardens, London S.W.1. March 15.

A Principal for the Chelsea Polytechnic.—The Secretary, Chelsea Polytechnic, Manresa Road, London, S.W.3.

A Lecturer in Chemistry at the Chelsea Polytechnic.—The Secretary, Chelsea Polytechnic, Manresa Road, S.W.3. March 24.

A Teacher of Rubber Technology at the Northern Polytechnic, Holloway, N.7.—The Clerk to the Governors. Full details are given in our advertisement columns, p. xxix.

A Chair of Biochemistry at the London School of Hygiene and Tropical Medicine.—The Academic Registrar, University of London, South Kensington, London, S.W.7. April 12.

From Week to Week

MR. H. S. WOOLF, of Aikman (London), Ltd., has joined the board of the Angela Nitrate Co., Ltd.

BEET SUGAR NEWS.—Lt.-Col. the Hon. Vernon Willey has accepted a seat on the board of the Lincolnshire Beet Sugar Co., Ltd.

A COLOUR AND VARNISH EXHIBITION is to be held at Magdeburg from August 3 to 12, organised by the German Association of Varnish Manufacturers and Traders.

THE MANCHESTER SECTION of the Oil and Colour Chemists' Association will hold a hot-pot supper and social evening on March 30, details of which will be announced later.

FOR THE FIRST TIME in its history of 70 years the Mill Close lead mine, near Matlock, has ceased production owing to the low price of lead in the market, due to foreign competition.

A CHEMICAL RESEARCH LABORATORY has been opened in Calcutta by the State authorities. The laboratory is under the direction of Dr. R. L. Dutta, and will deal with the better utilisation of raw materials originating in Bengal.

SIR ALFRED MOND and his party are now on their way home from Jerusalem. Before leaving Palestine they intended to visit Petra, but the project was dropped in consequence of possible Wahabi activities in the Maan direction.

OVER 100,000 TRADE BUYERS and 30,000 of the public had visited the London Section of the British Industries Fair when the White City was closed on March 2. In Birmingham the total number of buyers was 103,000 and the number of the public 14,000.

"THE LAW OF EVIDENCE AND THE EXPERT WITNESS" is the title of a paper to be read by Dr. H. S. Houldsworth (barrister-at-law) at a meeting of the Leeds Section of the Institute of Chemistry, on Monday, March 12, at the Great Northern Hotel, Leeds.

THE DEPARTMENT OF OVERSEAS TRADE is informed that local press reports at Prague state that an agreement has been reached in the protracted negotiations between the Czechoslovak cellulose industry and the International Cartel which will enable the Czechoslovak concerns to join the Cartel.

A READER HAS FOR SALE the following numbers of THE CHEMICAL AGE:—1922, April 22 and August 26 missing; 1923, complete; 1924, January 5 and 12, July 4 and 11 missing; 1925, complete; 1926, May 8 and 15 missing. Communication should be made in the first place to the office of this journal.

IN THE COURT OF CRIMINAL APPEAL, on Tuesday, Mr. Justice Avory refused the application of Col. Edmund Octavius Eaton for leave to appeal against his conviction at the Central Criminal Court for publishing fraudulent documents concerning the Chalk Fuel Power, Gas and By-products Corporation, Ltd.

THE CENTENARY of Friedrich Wöhler's classical synthesis of urea, which finally disposed of the view that the synthesis of the organic products of metabolism required the intervention of a special "vital force," occurs this month. The original paper, describing the production of urea from ammonium cyanate, was published in 1828 in *Poggendorff's Annalen*, Volume 12, p. 253.

A LODE OF BARYTES has been found in the Benbulbin Mountains, County Sligo, Irish Free State, and is to be worked by Barium Consolidated, Ltd. A number of men have been set to work clearing the foundations on the mountain side for the first of three mills to be erected in the locality within the next two years. The first mill is expected to be in full working order by October next.

AMONG THE EXHIBITORS at the Ideal Home Exhibition now proceeding at Olympia, London, are the following: United Water Softeners, Ltd., showing various "Permutit" softening plants for household and other uses; William Boby and Co., Ltd., showing Boby "Azed" water softeners; Electrolux, Ltd., showing among other things a fitment for water-softening; and Naylor Brothers (London), Ltd., showing various Nobel-Naylor finishes for home use, "Necol" plastic wood, etc.

AN ORDINARY SCIENTIFIC MEETING of the Chemical Society will be held at Burlington House, Piccadilly, W.1, on Thursday, March 15, at 8 p.m., when the following papers will be read:—"Mobile-anion Tautomerism—I," by H. Burton and C. K. Ingold; "Studies of Dynamic Isomerism—XXVII," by T. M. Lowry, C. A. H. MacConkey and H. Burgess; "The Parachor and Chemical Constitution—I," by J. J. Etridge and S. Sugden; and "Observations on the Passivity of Metals," by E. S. Hedges.

DR. R. E. SLADE, of Synthetic Ammonia and Nitrates, Ltd., gave an account of the development of the British nitrogen industry at Billingham in a lecture to the West Riding section of the Society of Dyers and Colourists at Bradford, on Thursday, February 2. The production of nitrogen for peace purposes, he said, had now just about reached the highest peak touched during the war for explosive purposes. In a discussion following the lecture, Dr. Slade said that in high pressure chemistry there would be further developments, and he thought the time would not be far distant when high pressures would be used in the manufacture of dyestuffs.

PORT SUNLIGHT, the famous Cheshire colony founded by the late Lord Leverhulme, celebrated its 40th birthday on Friday, March 3.

THE CENTRAL EXECUTIVE COMMITTEE of the U.S.S.R. has decided to ratify the Act of Adherence to the Protocol prohibiting the use of poison gas in war.

THE ROYAL DUBLIN SOCIETY has awarded its two Boyle Medals to Dr. W. R. G. Atkins (pure science) and Professor W. E. Adeney (applied science) respectively.

A BARGE LADEN WITH IRON OXIDE, lying off the South Metropolitan Gas Co.'s wharf at Blackwall Point, caught fire on Monday and severe damage was done before the outbreak was subdued.

THE FIRST OF THE TWO annual Ludwig Mond Lectures was delivered at the University of Manchester on Wednesday by Sir Walford Davies, his subject, being "The Mind of Handel."

THE KING WILL FORMALLY OPEN the new eastern wing of the National Museum of Science and Industry, Exhibition Road, South Kensington, at three o'clock on Tuesday afternoon, March 20.

MR. JAMES S. CARSON, who is at present under-manager of one of the collieries of the Ashington Coal Co., has been appointed by the British Colliery Owners' Research Association to the post of technical investigator.

THE CAPITAL of the Associated Portland Cement Manufacturers is to be increased by £1,000,000 in ordinary shares, raising it to £3,500,000, of which £500,000 is to be issued to shareholders in the proportion of one share to five shares held.

THE ANNUAL GENERAL MEETING of the Scientific and Technical Group of the Royal Photographic Society will be held on Tuesday, March 20, and will be followed by a lecture on "Photography and Photometry in X-ray Crystal Analysis," by Mr. W. T. Astbury.

EXPANSION of the CHILEAN NITRATE industry is being planned by the Guggenheim interests at Tocopilla, where buildings to cost four millions sterling are in the course of erection, for the production of half a million tons yearly. Plant for the Caplan-Smith process for utilising low-grade deposits will be installed.

WALKER, CROSWELLER and Co., London, announce that they have taken over the sole selling rights for the British Isles and certain countries abroad of the Dielectrometer, a portable instrument used for testing the dielectric strength of oils which was hitherto sold by the Empson Electrical Engineering Co., Ltd.

MR. R. P. DINSMORE, chief chemist of the Goodyear Tyre and Rubber Co., Ltd., will deliver a lecture entitled "Scheme of Accelerator Classification," at a meeting of the London Section of the Institution of the Rubber Industry, at the Institution of Mechanical Engineers, Storey's Gate, S.W.1, on Tuesday, March 13, at 8 p.m.

RECENT WILLS INCLUDE: Mr. J. K. Champion, at one time associated with Christopher Thomas and Brothers, Ltd., soap manufacturers, £18,117 (net personality, £17,932).—Mr. S. B. C. Stanford, chemical manufacturer, Ballach, Dumbartonshire, £7,648.—Mr. S. W. Woolley, lately editor of the *Chemist and Druggist*, £4,632 (net personality, £2,395).—Mr. S. Woodhead, a director of the Bradford Dyers' Association, £26,185 (net personality, £16,663).

IN CONNECTION WITH THE RECENT APPOINTMENT of an Industrial Transference Board to consider the problem of surplus labour in the coal mining industry, Imperial Chemical Industries, Ltd., have informed the Board that, realising the magnitude of the problem and its importance from a national point of view, they are prepared to give sympathetic consideration to the employment within their organisation of as many ex-miners as possible as and when opportunities occur.

THE MANCHESTER SECTION of the Society of Dyers and Colourists will hold a meeting on Friday, March 16, at 36, George Street, when the following papers will be read:—"The Valuation of Protective Agents," by Mr. H. Blackshaw; "A New Reagent for the Detection of Oxycellulose," by Mr. W. F. A. Ermen; "Note on the Effect of Light on Coloured Cotton Fabrics—II," by Miss E. Hibbert; "The Influence of Heat on the Affinity of Cotton for Dyestuffs," by Mr. C. K. Patel; "The Use of Wetting-out Agents for Cotton Bleaching," by Mr. P. Waghray.

THE COURT OF APPEAL, consisting of Lords Justices Scrutton and Sankey and Mr. Justice Russell, on February 20, dismissed the application of Mr. H. C. Gough, a fertiliser manufacturer, for a stay of execution pending his appeal to the House of Lords from the judgment of Mr. Justice Wright, and from a subsequent judgment in the Court of Appeal, in an action against the Partington Iron and Steel Co., Ltd., in which Mr. Gough sought to recover damages from the company on account of its alleged failure to supply him with its whole output of basic slag.

Obituary

EDUARD SANDOZ, joint founder of the Chemischen Fabrik vormals Sandoz in Basle, aged 75, at Lausanne.

MR. WILLIAM CONNALL BARCLAY, aged 72, partner in J. P. Brunner and Co., chemical brokers, Liverpool.

PROFESSOR W. W. H. GEE, well known as author of several works on electro-chemistry and chiefly responsible for the design of the laboratories of electro-chemistry at Manchester College of Technology, on Saturday, March 3, aged 71.

References to Current Literature

British

- FOODS.—The cause of fishiness in dairy products. W. L. Davies and A. T. R. Mattick. *Nature*, March 3, p. 324.
- GENERAL.—The affinity of wool for dyestuffs. F. T. Sykes. *Dyer and Calico Printer*, March 1, pp. 94-96.
- The kinetics of the combination of oxygen and hydrogen. C. N. Hinshelwood and H. W. Thompson. *Proc. Roy. Soc. A.*, March 1, pp. 170-183.
- Studies in adhesion. II. Sir W. Hardy and M. Nottage. *Proc. Roy. Soc. A.*, March 1, pp. 209-229.
- Note on the colouring matter present in the rhizomes of *Curcuma aromatica*, Salisb. B. S. Rao and V. P. Shintre. *J.S.C.I.*, February 24, p. 54 T.
- PAINTS.—The colloid chemistry of paints, varnishes and their components. I. R. S. Morrell and W. E. Wornum. *J. Oil and Colour Chem. Assoc.*, February, pp. 49-61.
- The application of methods of dyestuff analysis to the examination of pigments and lakes. A. G. Green. *J. Oil and Colour Chem. Assoc.*, February, pp. 38-48.

United States

- ANALYSIS.—Determination of sulphur in volatile fuels. H. T. Kennedy. *Ind. Eng. Chem.*, February, pp. 201-202.
- GENERAL.—The permeability of thin dry collodion membranes. J. H. Northrop. *J. General Physiology*, January 20, pp. 233-237.
- Products and profits of soap maker extended by technology. H. J. Morrison. *Chem. Met. Eng.*, February, pp. 105-106.
- Electrical methods of measuring and automatically controlling chemicals. H. C. Chapin. *Amer. Dyestuff Reporter*, February 20, pp. 120-126.
- Acid-resistant enamels. A. Malinovsky. *J. Amer. Ceramic Soc.*, February, pp. 110-113.
- Protective paint from rubber. H. Gray. *Ind. Eng. Chem.*, February 1, pp. 156-158.
- LACQUERS.—Symposium on lacquers and solvents.—Solvent structure and solvent action. B. K. Brown. Constants of nitrocellulose solvents. J. A. Bridgman. Explosive properties of lacquer-solvent vapours. E. G. Richardson and C. R. Sutton. Some observations on the consistency of lacquers. C. D. Bogin and C. W. Simms. Lacquer formulation, with especial reference to the use of cumar. A. Rogers and C. Bauta. Thinners for nitrocellulose lacquers. J. G. Davidson and E. W. Reid. *Ind. Eng. Chem.*, February 1, pp. 183, 184-187, 187-190, 190-196, 198, 199-200.
- PLANT.—Preventing excessive wear in mills for crushing and grinding. B. E. Field. *Chem. Met. Eng.*, February, pp. 96-98.
- SEWAGE.—Gases from sewage sludge digestion. W. D. Hatfield, G. E. Symons, and R. R. Mills. *Ind. Eng. Chem.*, February 1, pp. 174-176.
- SYNTHETIC AMMONIA.—Synthetic ammonia costs in America. R. S. Tour. *Chem. Met. Eng.*, February, pp. 89-91.
- WOOL.—The action of alkalis upon wool. I. C. E. Mullin. *Amer. Dyestuff Reporter*, February 20, pp. 109-114, 131.

German

- ANALYSIS.—The application of liquid amalgam in volumetric analysis. X. Various new methods for the determination of vanadium, chromium and some nitro-compounds. K. Someya. *Zeitschrift anorganische Chem.*, Vol. 169, Part 4, February 11, pp. 293-300.
- The direct oxidimetric determination of perchlorate in the presence of large amounts of chlorate and chlorite. E. Spitalsky and S. Jofa. *Zeitschrift anorganische Chem.*, Vol. 169, Part 4, pp. 309-318.
- A rapid analytical method for brass and red brass. W. Kollrep. *Chemiker-Zeitung*, March 3, p. 183.
- The potentiometric determination of gold. E. Müller and F. Weisbrod. *Zeitschrift anorganische Chem.*, Vol. 169, Part 4, pp. 394-398.
- Contribution to the knowledge of osmium. The quantitative determination of osmium. II. F. Fritzmann. *Zeitschrift anorganische Chem.*, Vol. 169, Part 4, February 11, pp. 356-364.

- Contribution to the knowledge of the titrimetric determination of carbonic acid. L. Smith and G. Wode. *Zeitschrift angewandte Chem.*, February 25, pp. 208-212.
- BEET-SUGAR.—Advances in the beet-sugar industry since 1924. O. Spengler. *Zeitschrift angewandte Chem.*, February 25, pp. 194-200.
- CORROSION.—Observations of apparent spontaneous decomposition and corrosion in lead linings and lead pipes. M. von Schwarz. *Korrosion und Metallschutz*, January, pp. 1-5.
- DYEING.—The dyeing of straw. A. Gebhardt. *Zeitschrift für Farbenindustrie*, February, pp. 71-76.
- Unequally dyeing artificial silks. H. Hoz. *Zeitschrift für Farbenindustrie*, February, pp. 68-70.
- GENERAL.—The efflorescence of sodium sulphite. D. N. Tarassenkow. *Zeitschrift anorganische Chem.*, Vol. 169, Part 4, February 11, pp. 407-412.
- On the existence of gaseous silicon monoxide. K. F. Bonhoeffer. *Zeitschrift physikal. Chem.*, Vol. 131, Part 5-6, pp. 363-365.
- Titanium and titanium compounds. J. Ott. *Die Metallbörse*, January 14, pp. 91-92; January 21, pp. 148-149; March 3, pp. 481-482.
- The behaviour of coke in the blast furnace. H. Illies. *Die Metallbörse*, March 3, p. 484.
- Silicic acid gel and silica gel. I. K. Wolf. *Die Metallbörse*, February 29, pp. 453-455.
- Problems in the chemistry of cellulose. K. Hess. *Zeitschrift für Farbenindustrie*, February, pp. 57-60.
- LACQUERS.—Theoretical and practical considerations on nitrocellulose lacquers. H. Wolff. *Korrosion und Metallschutz*, January, pp. 5-10.
- ORGANIC.—9-Iodophenanthrene. J. Salkind and F. Lubinskaja. *Berichte*, February 8, pp. 269-271.
- o'-o'-Diquinones of the naphthalene group. S. Goldschmidt and H. Wessbecher. *Berichte*, February 8, pp. 372-377.
- The decomposition of methyl chloride at high temperatures. K. Wiesler. *Chemiker-Zeitung*, March 3, pp. 182-183.
- The manufacture of phosgene. *Die Metallbörse*, February 29, pp. 455-456.
- PLANT.—Tank automobiles. L. Betz. *Chemische Fabrik*, February 22, pp. 89-90.
- A new extraction apparatus for liquids. J. Friedrichs. *Chemische Fabrik*, February 22, p. 91.
- A constant-temperature electric hot-plate. W. Schulz. *Chemische Fabrik*, February 22, pp. 91-93.

Miscellaneous

- ANALYSIS.—Investigation of a nephelometric method of determination of benzene in alcohol. L. Desvergnès. *Annales Chim. Analytique*, January 15, pp. 6-11 (in French).
- Determination of oleic acid and of linoleic acid contained in an oil. A new method of determining bromine value. Y. Volmar and B. Samdahl. *J. de Pharmacie et Chim.*, February 1, pp. 106-109 (in French).
- COLLOIDS.—The flocculations produced by mixing two colloidal solutions containing particles of opposite charge. A. Boutaric and M. Dupin. *Bulletin. Soc. Chim. France*, January, pp. 44-49 (in French).
- GENERAL.—The adsorption of ferric chloride on the surface of crystalline barium sulphate. L. de Brouckère. *Académie Royale Belgique. Bulletin Classe des Sciences*, Vol. 13, Part 12, pp. 827-836 (in French).
- Remarks on the preparation, purification and analysis of empyreumatic oil. R. Huerre. *Journal de Pharmacie et Chim.*, January 16, pp. 58-69 (in French).
- The colouration of alkaline thiocyanates in the light. E. Montignie. *Bulletin Soc. Chim. France*, January, pp. 106-108 (in French).
- ORGANIC.—The tautomerism of α -diketones. The constitution of the two forms of methylbenzylglyoxal. H. Moureu. *Comptes Rendus*, February 20, pp. 503-505 (in French).
- On some salts of mesotartaric acid. *Oesterreichische Chem-Zeitung*, February 15, pp. 28-32 (in German).

Patent Literature

The following information is prepared from published Patent Specifications and from the Illustrated Official Journal (Patents) by permission of the Controller to H.M. Stationery Office. Printed copies of full Patent Specifications accepted may be obtained from the Patent Office, 25, Southampton Buildings, London, W.C.2, at 1s. each.

Abstracts of Complete Specifications

284,808. PURIFICATION OF GASES, PROCESS FOR. The General Electric Co., Ltd., Magnet House, Kingsway, London, W.C.2, and C. J. Smithells, Research Laboratories, The General Electric Co., Ltd., Wembley, Middlesex. Application date, November 25, 1926.

Oxidising impurities are usually removed from gases such as hydrogen or argon by passing the gas over reducing agents such as hot copper, hot tungsten, or sodium. Oxygen is not completely removed in the first two cases if water is present, since the reaction of these metals with water is reversible. The removal of oxygen is complete with sodium but there are practical difficulties. In this invention, hydrogen or any of the rare gases can be purified from water and oxygen by passing it over metallic chromium heated to 700°–850° C. A preliminary purification of the gas may be effected by passing it over red-hot copper and phosphorus pentoxide.

284,839. DRYING GASES CONTAINING NITROGEN OXIDES. J. Y. Johnson, London. From I. G. Farbenindustrie Akt.-Ges., Frankfurt-on-Main, Germany. Application date, January 1, 1927.

Gases are frequently dried by means of concentrated sulphuric acid, but if nitrogen oxides are treated in this manner, combination with sulphuric acid occurs, with the formation of nitrosyl-sulphuric acid. It is now found that moist nitrogen oxides may be dried with little absorption by the sulphuric acid if the gases are treated at 30°–100° C. with sulphuric acid of such quantity and concentration that it becomes diluted with the moisture in the gases to a point at which it is capable of absorbing only small quantities of nitrogen oxides. The gas may be treated with sulphuric acid in counter-current in a tower. The initial concentration of the acid and the temperature and speed of the gas are chosen so that at the bottom of the tower the acid is reduced to 60–65 per cent. strength, when only a small proportion of nitrogen oxide is retained. The pressure is preferably about 5 atmospheres.

It is also found that sulphuric acid containing nitrogen oxides may be employed, and the acid is simultaneously denitrated. Thus, the gases obtained by the catalytic combustion of ammonia may be treated with sulphuric acid containing 4 per cent. of nitrogen, whereby the gases are dried and also enriched in nitrogen oxide while the nitrogen in the acid is reduced to 0.4 per cent.

284,958. SODIUM SULPHIDE, MANUFACTURE OF. B. Laporte, Ltd., Luton. From M. Schlaugk, G.m.b.H., Hannover, Germany. Application date, September 21, 1927.

The object is to obtain sodium sulphide which is substantially colourless and free from iron, which usually gives it a brown or amber colour. The crude sodium sulphide solution is treated with a soluble cyanide, or with an insoluble cyanide which will react with sodium sulphide to form sodium cyanide. The proportion of cyanide required is 0.2–1.0 per cent., depending on the initial colour of the sulphide solution. The solution is heated to 85°–90° C., allowed to settle and filtered, and then crystallised.

284,859. SEPARATING AND PURIFYING SULPHO-ACIDS OF HIGH MOLECULAR WEIGHT, PROCESS FOR. G. Petroff, 5, Tichwinskaja, Qu. 22, Moscow. Application date, February 1, 1927.

In the sulphonation of hydrogenated anthracene, naphtha hydrocarbons, hydrocarbons of the terpene series, etc., to obtain sulpho-acids of high molecular weight, the acids usually obtained contain impurities such as free oils, hydrocarbons, sulphuric acid, resins, sulphones, etc., as well as acids of lower molecular weight. The acids are dissolved in water, or water and alcohol, and mixed with hydrocellulose, wood powder, finely ground sawdust, or other porous cellulose which must be previously freed from salts and resinous constituents. The mixture is dried at 50–60° C. until the weight is constant,

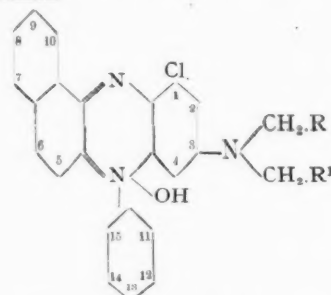
and then extracted successively with benzene, benzene and alcohol. Benzene extracts mineral oils, some of the resins, and sulphones, and benzene and alcohol extract sulpho-acids while the sulphuric acid is absorbed by the cellulose. The sulpho-acids are then obtained by distilling off the benzene and alcohol. Examples are given of the treatment of black naphtha sulpho-acids, with wood powder, and the sulpho-acid known as "Idrapidspalter" (octo-hydro-anthracene sulpho-acid) with hydrocellulose to obtain the pure sulpho-acids.

NOTE.—Abstracts of the following specifications which are now accepted, appeared in THE CHEMICAL AGE when they became open to inspection under the International Convention: 265,146–7 (Henkel & Cie. Ges.), relating to glycerine poor in poly-glycerines and containing di-glycerine, see Vol. XVI, p. 339; 280,877 (Silesia Verein Chemischer Fabriken), relating to separation of mono- and dialkyl derivatives of aromatic amines, see Vol. XVIII, p. 85.

International Specifications not yet Accepted

282,803. DYES. J. R. Geigy Akt.-Ges., Riehenring, Basle, Switzerland. International Convention date, December 27, 1926.

Azine dyes are obtained from a chlorisorosinduline having the general formula



in which R and R¹ are hydrogen, alkyl, or aryl, by treating with a sulphite in an organic solvent. The chlorine is removed, and the leuco 1:6-disulphonic is formed and then oxidised to produce the dyestuffs. The products give blue shades on wool from an acid bath, and can be used as intermediates in the production of naphthosafranine dyestuffs. Examples are given.

282,804–5. DYES. I.G. Farbenindustrie Akt.-Ges., Frankfurt-on-Main, Germany. International Convention date, December 27 and 24, 1926.

282,804. A diazotised dialkyl-safranine is coupled with 4-methyl-3-monoethylamino-1-phenol or 4-methyl-3-mono-benzylamino-1-phenol to obtain black copying colours.

282,805. 5-halogen-7-methylisatin-2¹-methyl-4¹-halogen-anilides are obtained by known methods from 5-halogen-2-toluidines, and condensed with nuclear substituted 3-oxythio-naphthenes. The products are violet shades on cotton.

282,814. DESTRUCTIVE HYDROGENATION. I. G. Farbenindustrie Akt.-Ges., Frankfurt-on-Main, Germany. International Convention date, August 14, 1925. Addition to 256,964. (See THE CHEMICAL AGE, Vol. XV, p. 403.)

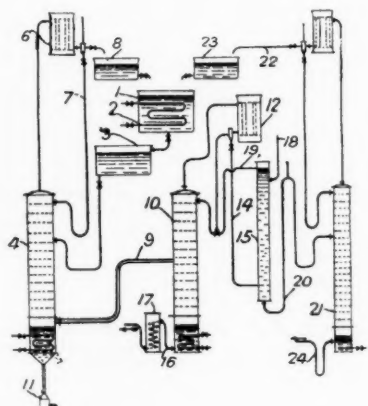
Oils, tars, resins, asphalts, or their conversion products are fed continuously into a high-pressure vessel coated with manganese bronze, and treated with hydrogen at 450° C. and 200 atmospheric pressure. A liquid product containing 25 per cent. benzines is obtained.

283,105. HYDROCARBONS. I. G. Farbenindustrie Akt.-Ges., Frankfurt-on-Main, Germany. International Convention date, January 3, 1927. Addition to 261,393. (See THE CHEMICAL AGE, Vol. XVI, p. 91.) Hydrocarbons are dehydrogenated in the presence of

chlorine, which may be admitted in small quantities or diluted, to prevent rise of temperature. A catalyst such as pumice, active carbon, silica, zinc borate, vanadium compounds, aluminium phosphate, chromium oxide, or copper chloride may also be present. Cracking may take place at the same time. In an example, melted paraffin flows over active carbon at 400°C ., and chlorine is passed over it. A yield of 90 per cent. of a liquid is obtained, of which 40 per cent. boils below 200°C ., nearly half of this being olefines.

283,112. ACETAL. Soc. Anon. des Distilleries des Deux Sèvres, Melle, Deux Sèvres, France. International Convention date, January 3, 1927.

Acetal is produced by treating alcohol and acetaldehyde with a catalyst such as hydrochloric, sulphuric, toluene-sulphonic or acetic acid, hydrogen phosphide, calcium chloride etc., only one-fifth to one tenth of the usual quantity of catalyst being used. The reaction is effected in a vessel 1,



283,112

having a cooling coil 2, and the neutralised product is discharged to a vessel 3 and still 4. The free acetaldehyde and some alcohol are distilled to a condenser 6 and returned by a pipe 7, and acetal with some alcohol collects at the bottom of the still. This liquid is vaporised, and passes through a pipe 9 to a still 10 containing some benzene in the upper part. An azeotropic mixture of benzene, alcohol, and water passes to a condenser 12, and part is returned to the still while the remainder passes to a washing column 15. Acetal passes from the bottom of the still 10 to a cooler 17. Benzene separates in the column 15 and returns to the still by a pipe 19. Dilute alcohol passes through pipe 20 to a concentrating still 21.

283,117. ALUMINA, ALUMINIUM NITRATE, and NITRIC ACID. M. Buchner, 1, Schellingstrasse, Kleefteld, Hanover, Germany. International Convention date, January 3, 1927.

Basic aluminium nitrate is obtained by treating excess of clay with nitric acid at 80° – 100°C ., and impurities such as iron are removed by allowing the solution to stand. The basic nitrate is crystallised, and heated to 200°C . to obtain nitric acid, the yield being 92 per cent. The alumina obtained is free from iron.

283,118. DYES. I.G. Farbenindustrie Akt.-Ges., Frankfurt-on-Main, Germany. International Convention date, January 3, 1927. Addition to 282,805.

A nuclear substituted 3-oxythionaphthene is condensed with a 5:7-dimethyl-isatin-2':4'-dimethyl-anilide, or a 5:7-dimethyl-4-halogen-isatin-2':4'-dimethyl-5'-halogen-anilide, or a 5-halogen-7-methyl-isatin-2'-methyl-4'-halogen-anilide containing two halogen atoms or two methyl groups in the 4- and 5'-positions to obtain 2-thionaphthalene-2-indole-indigo dyes. The isatin arylides are obtained by the Sandmeyer process by way of the thioureas from the corresponding amines. The products give violet shades on cotton and examples are given.

283,119. METHYLENE CHLORIDE. I.G. Farbenindustrie Akt.-Ges., Frankfurt-on-Main, Germany. International Convention date, January 3, 1927.

A mixture of chlorine and methyl chloride is passed through a tube heated to 360°C .– 380°C . to obtain methylene chloride.

283,159. EXTRACTING OILS. I.G. Farbenindustrie Akt.-Ges., Frankfurt-on-Main, Germany. Assignees of F. Hofman, and C. Wulff, Breslau, Germany. International Convention date, January 5, 1927.

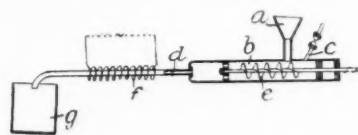
Oil shale and the like are treated with liquid sulphur dioxide with or without benzene, at an increased temperature and pressure.

283,163. ORGANIC BASES. I.G. Farbenindustrie Akt.-Ges., Frankfurt-on-Main, Germany. International Convention date, January 5, 1927.

A mixture of acetylene and ammonia is passed over a catalyst consisting of an inorganic salt capable of forming an addition compound with ammonia. The catalyst may be a halide which forms an ammonia compound stable at the reaction temperature and forms a double compound with pyridine. The catalyst may be zinc chloride, a mixture of zinc and ferric chlorides, or cadmium and cuprous chlorides. The reaction temperature is 280° – 350°C ., and the reaction is exothermic. A diluent gas may be added. In an example, ammonia is circulated over the catalyst, and a mixture of ammonia and acetylene added to the stream, some of the gas being withdrawn after passing the catalyst. Liquid products are condensed out and consist of diethylamine 15–20 per cent., triethylamine and cyclic bases rich in hydrogen 5–6 per cent., α and γ methyl-pyridine 60–65 per cent., higher methyl pyridines and polynuclear bases 10–12 per cent.

283,177. HYDROGENATION OF COAL. A. Uhlmann, 90, Schlossstrasse, Steglitz, Berlin. International Convention date, January 6, 1927.

Coal dust is supplied through a funnel *a* and water through a pipe *c* to a cylinder *b* having a rotary mixer *e*. The pulp is forced through a pipe *d* where it is subjected to a high fre-



283,177

quency magnetic field produced by a coil *f*. Hydrogen is obtained by decomposition of the water, or may be added. Hydrocarbons are obtained.

283,187. TREATING PHOSPHATES. F. G. Liljenroth, 14, Eriksbergsgatan, Stockholm. International convention date, January 8, 1927.

Raw phosphates are treated with acid to obtain phosphoric acid, and the lime treated with sulphate solution to obtain calcium sulphate. The latter is treated with ammonia and carbon dioxide to obtain ammonium sulphate and calcium carbonate. The latter is heated with silica and aluminiferous material, to form cement clinker, and the ammonium sulphate can be used to precipitate calcium sulphate.

283,194. MANURES. Rhenania Kunheim Verein Chemischer Fabriken Akt.-Ges., 10, Reichstagsufer, Berlin. International Convention date, January 8, 1927.

Calcined phosphates such as Rhenania phosphate are mixed with ammonium salts and sufficient acid or acid salt to neutralise the phosphate. Thus, mixtures of phosphate, ammonium nitrate, acid, and potassium chloride, and in another case, phosphate and tri-ammonium-mono-hydro-sulphate may be used.

LATEST NOTIFICATIONS.

286,206. Process for the manufacture of catalysts for the hydrogenation of organic substances, and their application to the hydrogenation of the said substances, especially to the hydrogenation of the products of the distillation of coals and petroleum oils. Hugel, G., Paul, M., and Boistel, M. February 28, 1927.

285,887. Finish removers. Carbide and Carbon Chemicals Corporation. February 26, 1927.

- 285,888. Finish removers. Carbide and Carbon Chemicals Corporation. February 26, 1927.
- 286,208. Process for the recovery of organic substances from liquors. Laboratorium Tasch Akt.-Ges. February 28, 1927.
- 285,847. Manufacture of sulphuric acid. Soc. Generale Metallurgique de Hoboken. February 23, 1927.
- 285,873. Process for manufacture of reaction products of cyanamide. Schering-Kahlbaum Akt.-Ges. February 24, 1927.
- 285,907. Distillation of tar. Barrett Co. February 26, 1927.
- 285,833. Process for the manufacture of thymol and menthol. Schering-Kahlbaum Akt.-Ges. February 22, 1927.
- 285,840. Manufacture of azine-dyestuffs. Soc. Anon. des Matieres Colorantes et Produits Chimiques de Saint-Denis, Lantz, R., and Wahl, A. February 22, 1927.
- 285,858. Process for the manufacture of esters of cellulose. I.G. Farbenindustrie Akt.-Ges. February 23, 1927.
- 285,877. Manufacture of 4-nitro-2-amino-1-benzoic acids and derivatives thereof. I.G. Farbenindustrie Akt.-Ges. February 24, 1927.
- 285,880. Emulsifying agents. Bräunlich, F. February 24, 1927.
- 285,923. Manufacture and production of valuable hydrocarbons or derivatives thereof from coal, tars, mineral oils, and the like. I.G. Farbenindustrie Akt.-Ges. September 10, 1925.
- 286,201. Manufacture of hydrogenated aromatic carboxylic acid esters and carboxylic acids. I.G. Farbenindustrie Akt.-Ges. February 26, 1927.
- 286,226. Process for the manufacture of azo-dyestuffs. I.G. Farbenindustrie Akt.-Ges. February 28, 1927.
- 286,227. Process for the manufacture of substantive dis- and poly-azo dyestuffs. I.G. Farbenindustrie Akt.-Ges. February 28, 1927.
- Specifications Accepted with Date of Application**
- 259,982. Pyridine derivatives, Production of. Deutsche Gold- und Silber-Scheideanstalt vorm. Roessler. October 17, 1925.
- 261,735. Gas purification process and apparatus. Koppers Co. November 18, 1925.
- 265,920. Vulcanising rubber. Goodyear Tire and Rubber Co. February 12, 1926.
- 267,885. Sulphuric acid, Manufacture of. H. Petersen. November 25, 1926.
- 267,972. Melting metals, Process of—and apparatus therefor. F. W. Corsalli. March 19, 1926.
- 271,100. Purifying and deaerating molten iron, Apparatus for. J. Dechesne. May 14, 1926. Addition to 265,827.
- 272,951. Acetic anhydride, Manufacture of. Consortium für Elektro-chemische Industrie Ges. June 17, 1926.
- 275,145. Extracting phosphorus from its compounds by reduction. H. Wittek. July 27, 1926.
- 285,551. Vanillin and i-vanillin, Process for the preparation of. F. Boedecker. November 16, 1926. Addition to 285,156.
- 285,555. Vat dyestuffs of the anthraquinone series, Manufacture of. K. Carpmal and K. S. Carpmal. (I.G. Farbenindustrie Akt.-Ges.). November 16, 1926.
- 285,564. Petroleum products from bituminous material, Process for the extraction of. P. Dvorkovitz. November 17, 1926.
- 285,565. Alloys known as high resistance alloys. W. S. Smith, H. J. Garnett and J. A. Holden. November 17, 1926.
- 285,571. Chromium or like refractory metals, Manufacture of. General Electric Co., Ltd., and C. J. Smithells. November 18, 1926.
- 285,598. Barbituric acid soporifics, Manufacture of. O. Y. Imray. (I.G. Farbenindustrie Akt.-Ges.). December 7, 1926.
- 285,630. Refining metals, Methods of and apparatus for. E. C. R. Marks. (American Smelting and Refining Co.). January 21, 1927.
- 285,662. Recovering metal from iron pyrites, similar ores, and liquors containing copper and zinc. C. F. Schantz. March 12, 1927.
- 285,668. Converting heavy hydrocarbons into light and stable hydrocarbons, Process and device for. P. Grene. March 21, 1927.
- 257,270. Purification of the liquid complex hydrocarbon products of the destructive hydrogenation of carbonaceous materials. I.G. Farbenindustrie Akt.-Ges. August 20, 1925.
- Coley, H. E. Activating carbon, etc. 6,456. March 1.
- Coley, H. E. Manufacture of zinc oxide. 6,457. March 1.
- Coley, H. E. Apparatus for heating retorts, etc. 6,648. March 2.
- Gray Processes Corporation. Refining hydrocarbon distillates. 6,250. February 28. (United States, July 7, 1927.)
- Hübsch, M. G., and Kärpati, J. Manufacture of acetic acid from acetylene. 6,649. March 2. (Hungary, March 16, 1927.)
- Hübsch, M. G., and Kärpati, J. Manufacture of acetic acid from acetylene. 6,650. March 2. (Hungary, July 21, 1927.)
- Hübsch, M. G., and Kärpati, J. Manufacture of acetaldehyde from acetylene. 6,651. March 2. (Hungary, July 21, 1927.)
- Huntington, Heberlein, and Co., Ltd. (Ufer Ingenieur Ges.). Refining benzole hydrocarbons. 6,625. March 2.
- I.G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Treatment of paper web with chemicals, etc. 6,057. February 27.
- I.G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Production of azo-dyestuffs. 6,462. March 1.
- I.G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Liquefying and solubilising coals. 6,463. March 1.
- I.G. Farbenindustrie Akt.-Ges. Production of vat dyestuffs. 6,056. February 27. (December 13, 1926.)
- I.G. Farbenindustrie Akt.-Ges. Manufacture of hydrogenated aromatic carboxylic acid esters, etc. 6,075. February 27. (Germany, February 26, 1927.)
- I.G. Farbenindustrie Akt.-Ges. Manufacture of azo-dyestuffs. 6,078, 6,079. February 27. (Germany, February 28, 1927.)
- I.G. Farbenindustrie Akt.-Ges. Production of photographic prints, etc. 6,229. February 28. (Germany, February 28, 1927.)
- I.G. Farbenindustrie Akt.-Ges. Making bands of artificial fibre. 6,368. February 29. (Germany, March 5, 1927.)
- I.G. Farbenindustrie Akt.-Ges. Manufacture of water-soluble, etc., products from wool fats. 6,370. February 29. (Germany, March 1, 1927.)
- I.G. Farbenindustrie Akt.-Ges. Manufacture of anthraquinone dyestuffs. 6,470. March 1. (Germany, March 8, 1927.)
- I.G. Farbenindustrie Akt.-Ges. Manufacture of synthetic rubber. 6,471. March 1. (Germany, March 2, 1927.)
- I.G. Farbenindustrie Akt.-Ges. Manufacture of azo-dyestuffs. 6,472. March 1. (Germany, March 10, 1927.)
- I.G. Farbenindustrie Akt.-Ges. Manufacture of azo-dyestuffs, insoluble in water. 6,614. March 2. (Germany, March 2, 1927.)
- I.G. Farbenindustrie Akt.-Ges. Manufacture of yarn from silk fibre. 6,615. March 2. (United States, March 2, 1927.)
- I.G. Farbenindustrie Akt.-Ges. Spinning artificial threads. 6,732. March 3. (Germany, March 24, 1927.)
- Imperial Chemical Industries, Ltd. Recovery of volatile liquids. 6,422. March 1.
- Imperial Chemical Industries, Ltd., Rodd, E. H., and Stocks, H. H. Process for manufacture of xanthene dyes. 6,746. March 3.
- Imperial Chemical Industries, Ltd., Rodd, E. H., and Stocks, H. H. Manufacture of *n*-substituted diamino-xanthenes. 6,747. March 3.
- Kozmizta, Niko, Baron von. Producing solids from liquids. 6,047. February 27.
- Mond, A. L. (Metallbank und Metallurgische Ges.). Copper-silicon alloys. 6,393. February 29.
- Morgan, G. T. Manufacture of aldehydes, etc. 6,182. February 28.
- Riley, R. Recovery of volatile liquids. 6,422. March 1.
- Ruzicka, C. Process for production of cellulose esters. 6,062. February 27.
- Silica Gel Corporation. Preparing catalytic gels. 6,642. March 2. (United States, March 3, 1927.)
- Soc. of Chemical Industry in Basle. Manufacture of sheets of artificial resins, etc. 6,076. February 27. (Switzerland, March 1, 1927.)
- South Metropolitan Gas Co. Treatment of oils etc., derived from coal. 6,731. March 3.
- Ufer Ingenieur Ges., A. Refining benzole hydrocarbons. 6,625. March 2.
- Wittouck, S. Manufacture of barium compounds. 6,739. March 3.

Applications for Patents

- Barrett Co. Distillation of tar. 6,647. March 2. (United States, March 2, 1927.)
- Bensa, F. Manufacture of highly-chlorinated perylenes. 6,495. March 1. (Austria, April 2, 1927.)
- Bianchi, A. E., and Guardabassi, G. Apparatus for distillation, etc., of liquids. 6,087. February 27.
- Carpmal, A. (I.G. Farbenindustrie Akt.-Ges.). Adsorption of vapours, etc. 6,080. February 27.

Time Recorders for Industrial Use

A PAMPHLET received from Gledhill-Brook Time Recorders, Ltd., Huddersfield, contains details of "GB" time recorders. These include a standard recording equipment, for registering the attendance of employees, tell-tale recorders for checking watchmen's rounds, key recorders, radial recorders, and autograph recorders for checking the punctuality of salaried employees. The "GB" instruments are fitted with fusee-and-chain clockwork mechanism, which prevents clocks from working unevenly and thereby giving rise to complaints.

Weekly Prices of British Chemical Products

The prices and comments given below respecting British chemical products are based on direct information supplied by the British manufacturers concerned. Unless otherwise qualified, the figures quoted apply to fair quantities, net and naked at makers' works.

General Heavy Chemicals

ACID ACETIC, 40% TECH.—£19 per ton.
 ACID BORIC, COMMERCIAL.—Crystal, £30 per ton; powder, £32 per ton; extra fine powder, £34 per ton.
 ACID HYDROCHLORIC.—38.9d. to 6s. per carboy d/d, according to purity strength, and locality.
 ACID NITRIC, 80° Tw.—£21 10s. to £27 per ton, makers' works, according to district and quality.
 ACID SULPHURIC.—Average National prices f.o.r. makers' works, with slight variations up and down owing to local considerations; 140° Tw., Crude Acid, 60s. per ton. 168° Tw., Arsenical, £5 10s. per ton. 168° Tw., Non-arsenical, £6 15s. per ton.
 AMMONIA ALKALI.—£6 15s. per ton f.o.r. Special terms for contracts.
 BISULPHITE OF LIME.—£7 10s. per ton, f.o.r. London, packages extra.
 BLEACHING POWDER.—Spot, £9 10s. per ton d/d; Contract, £8 10s. per ton d/d, 4-ton lots.
 BORAX, COMMERCIAL.—Crystals, £19 10s. to £20 per ton; granulated, £19 per ton; powder, £21 per ton. (Packed in 2-cwt. bags, carriage paid any station in Great Britain.)
 CALCIUM CHLORIDE (SOLID).—£5 to £5 5s. per ton d/d carr. paid.
 COPPER SULPHATE.—£25 to £25 10s. per ton.
 METHYLATED SPIRIT 61 O.P.—Industrial, 1s. 11d. to 2s. 4d. per gall.; pyridinised industrial, 2s. 1d. to 2s. 6d. per gall.; mineralised, 3s. to 3s. 4d. per gall.; 64 O.P., 1d. extra in all cases; prices according to quantity as from March 1, 1928.
 NICKEL SULPHATE.—£38 per ton d/d.
 NICKEL AMMONIA SULPHATE.—£38 per ton d/d.
 POTASH CAUSTIC.—£30 to £33 per ton.
 POTASSIUM BICHRIMATE.—4½d. per lb.
 POTASSIUM CHLORATE.—3½d. per lb., ex wharf, London, in cwt. kegs.
 SALAMMONIAC.—£45 to £50 per ton d/d. Chloride of ammonia, £37 to £45 per ton, carr. paid.
 SALT CAKE.—£3 15s. to £4 per ton d/d. In bulk.
 SODA CAUSTIC, SOLID.—Spot lots delivered, £15 2s. 6d. to £18 per ton, according to strength; 20s. less for contracts.
 SODA CRYSTALS.—£5 to £5 5s. per ton, ex railway depots or ports.
 SODIUM ACETATE 97/98%.—£21 per ton.
 SODIUM BICARBONATE.—£10 10s. per ton, carr. paid.
 SODIUM BICHRIMATE.—3½d. per lb.
 SODIUM BISULPHITE POWDER, 60/62%.—£17 10s. per ton delivered for home market, 1-cwt. drums included; £15 10s. f.o.r. London.
 SODIUM CHLORATE.—2½d. per lb.
 SODIUM NITRITE, 100% BASIS.—£27 per ton d/d.
 SODIUM PHOSPHATE.—£14 per ton, f.o.b. London, casks free.
 SODIUM SULPHATE (GLAUBER SALTS).—£3 12s. 6d. per ton.
 SODIUM SULPHIDE CONC. SOLID, 60/65.—£13 5s. per ton d/d. Contract, £13. Carr. paid.
 SODIUM SULPHIDE CRYSTALS.—Spot, £8 12s. 6d. per ton d/d. Contract, £8 10s. Carr. paid.
 SODIUM SULPHITE, PEA CRYSTALS.—£14 per ton f.o.b. London, 1-cwt. kegs included.

Coal Tar Products

ACID CARBOLIC CRYSTALS.—6½d. to 7½d. per lb. Crude 60's, 2s. 3d. to 2s. 4d. per gall. prompt.
 ACID CRESYLIC 99/100.—2s. 11d. to 3s. per gall. 97/99.—2s. 6d. to 2s. 7d. per gall. Pale, 95%, 2s. 5d. to 2s. 6d. per gall. Dark, 95%, 2s. 2d. to 2s. 3d.
 ANTHRACENE.—A quality, 2½d. per unit. 40%, £5 per ton.
 ANTHRACENE OIL, STRAINED.—8d. to 8½d. per gall. Unstrained, 7½d. to 8d. per gall.
 BENZOLE.—Prices at works; Crude, 8½d. to 9d. per gall.; Standard Motor, 1s. 1d. to 1s. 2d. per gall.; 90%, 1s. 2d. to 1s. 3d. per gall.; Pure, 1s. 5d. to 1s. 6d. per gall.
 TOLUOLE.—90%, 1s. 4d. to 1s. 8d. per gall. Firm. Pure, 1s. 6d. to 1s. 11d. per gall.
 XYLOL.—1s. 3d. to 1s. 7d. per gall. Pure, 2s. 4d. per gall.
 CREOSOTE.—Cresylic, 20/24%, 10d. to 11d. per gall.; middle oil, 8d. to 9d. per gall. Heavy, 8½d. to 9d. per gall. Standard specification, 7½d. to 7¾d. ex works. Salty, 7½d. per gall.
 NAPHTHA.—Crude, 7½d. to 8d. per gall. Solvent 90/160, 10d. to 10½d. per gall. Solvent 95/160, 1s. 3d. to 1s. 4d. per gall. Solvent 90/190, 9½d. to 1s. 2d. per gall.
 NAPHTHALENE CRUDE.—Drained Creosote Salts, £5 per ton. Whizzed or hot pressed, £8 per ton.
 NAPHTHALENE.—Crystals, £13 to £13 10s. per ton. Quiet. Flaked, £14 to £15 per ton, according to districts.
 PITCH.—Medium soft, 55s. to 75s. per ton, f.o.b., according to district. Nominal.
 PYRIDINE.—90/140, 5s. 6d. to 6s. per gall. 90/180, 3s. to 5s. per gall. Heavy, 2s. 6d. to 3s. per gall.

Intermediates and Dyes

In the following list of Intermediates delivered prices include packages except where otherwise stated:
 ACID AMIDONAPHTHOL DISULPHO (1-8-2-4).—10s. 9d. per lb.
 ACID ANTHRANILIC.—6s. per lb. 100%.
 ACID BENZOIC.—1s. 8½d. per lb.
 ACID GAMMA.—4s. 6d. per lb.
 ACID H.—3s. per lb.
 ACID NAPHTHIONIC.—1s. 6d. per lb.
 ACID NEVILLE AND WINTHER.—4s. 9d. per lb.
 ACID SULPHANILIC.—8½d. per lb.
 ANILINE OIL.—8d. per lb. naked at works.
 ANILINE SALTS.—8d. per lb. naked at works.
 BENZALDEHYDE.—2s. 3d. per lb.
 BENZIDINE BASE.—3s. 3d. per lb. 100% basis d/d.
 BENZOIC ACID.—1s. 8½d. per lb.
 o-CRESOL 29/31° C.—5½d. per lb.
 m-CRESOL 98/100%.—2s. 3d. to 2s. 5d. per lb.
 p-CRESOL 32/34° C.—2s. 3d. to 2s. 5d. per lb.
 DICHLORANILINE.—2s. per lb.
 DIMETHYLANILINE.—1s. 11d. per lb.
 DINITROBENZENE.—8½d. per lb. naked at works. £75 per ton.
 DINITROCHLOROBENZENE.—£84 per ton d/d.
 DINITROTOLUENE.—48/50° C. 8d. per lb. naked at works. 66/68° C. 9d. per lb. naked at works.
 DIPHENYLAMINE.—2s. 10d. per lb. d/d.
 a-NAPHTHOL.—2s. per lb. d/d.
 B-NAPHTHOL.—10d. per lb. d/d.
 a-NAPHTHYLAMINE.—1s. 3d. per lb.
 B-NAPHTHYLAMINE.—3s. per lb.
 o-NITRANILINE.—5s. 9d. per lb.
 m-NITRANILINE.—3s. per lb. d/d.
 p-NITRANILINE.—1s. 8d. per lb.
 NITROBENZENE.—6d. per lb. naked at works.
 NITRONAPHTHALENE.—1s. 3d. per lb.
 R. SALT.—2s. 2d. per lb.
 SODIUM NAPHTHIONATE.—1s. 8½d. per lb. 100% basis d/d.
 o-TOLUIDINE.—8d. per lb.
 p-TOLUIDINE.—2s. 1d. per lb. naked at works.
 m-XYLIDINE ACETATE.—2s. 6d. per lb. 100%.
 N. W. ACID.—4s. 9d. per lb. 100%.

Wood Distillation Products

ACETATE OF LIME.—Brown, £10 5s. per ton. Good demand.
 Grey, £14 10s. to £15 per ton. Liquor, 9d. per gall.
 CHARCOAL.—£6 to £9 per ton, according to grade and locality. Foreign competition severe.
 IRON LIQUOR.—1s. 3d. per gall, 32° Tw. 1s. per gall. 24° Tw.
 RED LIQUOR.—9d. to 10d. per gall.
 WOOD CREOSOTE.—1s. 9d. per gall. Unrefined.
 WOOD NAPHTHA, MISCIBLE.—3s. 11d. to 4s. 3d. per gall. Solvent, 4s. 3d. per gall.
 WOOD TAR.—£4 to £5 per ton.
 BROWN SUGAR OF LEAD.—£40 15s. per ton.

Rubber Chemicals

ANTIMONY SULPHIDE.—Golden, 6½d. to 1s. 5½d. per lb., according to quality; Crimson, 1s. 4d. to 1s. 6d. per lb., according to quality.
 ARSENIC SULPHIDE, YELLOW.—1s. 9d. per lb.
 BARYTES.—£3 10s. to £6 15s. per ton, according to quality.
 CADMIUM SULPHIDE.—2s. 6d. to 2s. 9d. per lb.
 CARBON BISULPHIDE.—£20 to £25 per ton, according to quantity.
 CARBON BLACK.—5½d. per lb., ex wharf.
 CARBON TETRACHLORIDE.—£45 to £50 per ton, according to quantity, drums extra.
 CHROMIUM OXIDE, GREEN.—1s. 1d. per lb.
 DIPHENYLGUANIDINE.—3s. 9d. per lb.
 INDIARUBBER SUBSTITUTES, WHITE AND DARK.—5½d. to 6½d. per lb.
 LAMP BLACK.—£35 per ton, barrels free.
 LEAD HYPOSULPHITE.—9d. per lb.
 LITHOPHON, 30%.—£22 10s. per ton.
 MINERAL RUBBER "RUBPRON".—£13 12s. 6d. per ton, f.o.r. London.
 SULPHUR.—£9 to £11 per ton, according to quality.
 SULPHUR CHLORIDE.—4d. to 7d. per lb., carboys extra.
 SULPHUR PRECIP. B.P.—£47 10s. to £50 per ton.
 THIOCARBAMIDE.—2s. 6d. to 2s. 9d. per lb., carriage paid.
 THIOCARBANILIDE.—2s. 1d. to 2s. 3d. per lb.
 VERMILION, PALE OR DEEP.—6s. to 6s. 3d. per lb.
 ZINC SULPHIDE.—1s. per lb.

Pharmaceutical and Photographic Chemicals

ACID, ACETIC, PURE, 80%.—£39 per ton ex wharf London in glass containers.
 ACID, ACETYL SALICYLIC.—2s. 5d. to 2s. 7d. per lb.
 ACID, BENZOIC, B.P.—2s. to 3s. 3d. per lb., according to quantity. Solely ex Gum, 1s. 3d. to 1s. 6d. per oz., according to quantity.

ACID, BORIC B.P.—Crystal, 36s. to 39s. per cwt.; powder, 40s. to 43s. per cwt.; extra fine powder, 42s. per cwt., according to quantity. Carriage paid any station in Great Britain, in ton lots.

ACID, CAMPHORIC.—19s. to 21s. per lb.

ACID, CITRIC.—March 2, 2s. to 2s. 3d. per lb.; March 5, 1s. 10d. to 1s. 11d. per lb. Both less 5%. Scarce.

ACID, GALLIC.—2s. 8d. per lb. for pure crystal, in cwt. lots.

ACID, PYROGALLIC, CRYSTALS.—7s. 3d. per lb. Resublimed, 8s. 3d. per lb.

ACID, SALICYLIC, B.P. PULV.—1s. 2d. to 1s. 3d. per lb.; Technical.—11½d. to 11¾d. per lb.

ACID, TANNIC B.P.—2s. 8d. to 2s. 10d. per lb.

ACID, TARTARIC.—1s. 4½d. per lb., less 5%.

ACETANILIDE.—1s. 5d. to 1s. 8d. per lb. for quantities.

AMIDOL.—7s. 6d. to 9s. per lb., d/d.

AMIDOPYRIN.—8s. to 8s. 3d. per lb.

AMMONIUM BENZOATE.—3s. to 3s. 3d. per lb., according to quantity. 18s. per lb. ex Gum.

AMMONIUM CARBONATE B.P.—£37 per ton. Powder, £39 per ton in 5 cwt. casks. Resublimed, 1s. per lb.

ATROPINE SULPHATE.—9s. per oz.

BARBITONE.—5s. 9d. to 6s. per lb.

BENZONAPHTHOL.—3s. 3d. per lb. spot.

BISMUTH CARBONATE.—11s. 4d. to 11s. 7d. per lb.

BISMUTH CITRATE.—10s. 4d. to 10s. 7d. per lb.

BISMUTH SALICYLATE.—10s. 7d. to 10s. 10d. per lb.

BISMUTH SUBNITRATE.—9s. 7d. to 9s. 10d. per lb.

BISMUTH NITRATE.—6s. 7d. to 6s. 10d. per lb.

BISMUTH OXIDE.—14s. 7d. to 14s. 10d. per lb.

BISMUTH SUBCHLORIDE.—14s. 4d. to 14s. 7d. per lb.

BISMUTH SUBGALLATE.—8s. 7d. to 8s. 10d. per lb. Extra and reduced prices for smaller and larger quantities of all bismuth salts respectively.

BISMUTH ET AMMON LIQUOR.—Cit. B.P. in W. Qts. 1s. 1½d. per lb.; 12 W. Qts. 1s. 0½d. per lb.; 36 W. Qts., 1s. per lb.

BORAX B.P.—Crystal, 24s. to 27s. per cwt.; powder, 25s. to 28s. per cwt., according to quantity. Carriage paid any station in Great Britain, in ton lots.

BROMIDES.—Ammonium, 2s. 1d. to 2s. 3d. per lb.; potassium, 1s. 9½d. to 1s. 11½d. per lb.; sodium, 2s. to 2s. 2d. per lb.; granulated ½d. per lb. less; all spot. Large quantities at lower rates.

CALCIUM LACTATE.—1s. 1½d. to 1s. 2½d. per lb.

CAMPOR.—Refined flowers, 2s. 11d. to 3s. per lb., according to quantity; also special contract prices.

CHLORAL HYDRATE.—3s. 2d. to 3s. 4d. per lb.

CHLOROFORM.—2s. 3d. to 2s. 7½d. per lb., according to quantity.

CREOSOTE CARBONATE.—6s. per lb.

ETHERS.—S.G. 730—1s. 0½d. to 1s. 1½d. per lb., according to quantity; other gravities at proportionate prices.

FORMALDEHYDE.—£39 per ton, in barrels ex wharf.

GUAIACOL CARBONATE.—4s. 9d. to 5s. per lb.

HEXAMINE.—2s. 3d. to 2s. 6d. per lb.

HOMATROPINE HYDROBROMIDE.—30s. per oz.

HYDRASTINE HYDROCHLORIDE.—English make offered at 120s. per oz.

HYDROGEN PEROXIDE (12 VOLS.).—1s. 4d. per gallon, f.o.r. makers' works, naked. Winchesters, 2s. 11d. per gall. B.P., 10 vols., 2s. to 2s. 3d. per gall.; 20 vols., 4s. per gall.

HYDROQUINONE.—3s. 9d. to 4s. per lb., in cwt. lots.

HYPOPHOSPHITES.—Calcium, 3s. 6d. per lb., for 28-lb. lots; potassium, 4s. 1d. per lb.; sodium, 4s. per lb.

IRON AMMONIUM CITRATE.—B.P., 2s. 3d. to 2s. 6d. per lb. Green, 2s. 6d. to 2s. 11d. per lb.; U.S.P., 2s. 4d. to 2s. 7d. per lb.

IRON PERCHLORIDE.—18s. to 20s. per cwt., according to quantity.

MAGNESIUM CARBONATE.—Light commercial, £31 per ton net.

MAGNESIUM OXIDE.—Light commercial, £62 10s. per ton, less 2½%; Heavy commercial, £21 per ton, less 2½%; in quantity lower; Heavy Pure, 2s. to 2s. 3d. per lb., in 1 cwt. lots.

MENTHOL.—A.B.R. recrystallised B.P., 16s. 6d. per lb. net for January delivery; Synthetic, 9s. to 10s. per lb.; Synthetic detached crystals, 9s. to 12s. 6d. per lb., according to quantity; Liquid (95%), 9s. 6d. per lb.

MERCURIALS B.P.—Up to 1 cwt. lots, Red Oxide, 7s. 6d. to 7s. 7d. per lb., levig., 7s. to 7s. 1d. per lb.; Corrosive Sublimate, Lump, 5s. 9d. to 5s. 10d. per lb.; Powder, 5s. 2d. to 5s. 3d. per lb.; White Precipitate, Lump, 5s. 11d. to 6s. per lb.; Powder, 6s. to 6s. 1d. per lb.; Extra Fine, 6s. 1d. to 6s. 2d. per lb.; Calomel, 6s. 4d. to 6s. 5d. per lb.; Yellow Oxide, 6s. 10d. to 6s. 11d. per lb.; Persulph., B.P.C., 6s. 1d. to 6s. 2d. per lb.; Sulph. nig., 5s. 10s. to 5s. 11d. per lb. Special prices for larger quantities.

METHYL SALICYLATE.—1s. 5d. to 1s. 9d. per lb.

METHYL SULPHONAL.—9s. to 9s. 3d. per lb.

METOL.—9s. to 11s. 6d. per lb. British make.

PARAFORMALDEHYDE.—1s. 9d. per lb. for 100% powder.

PARALDEHYDE.—1s. 1d. to 1s. 4d. per lb.

PHENACETIN.—2s. 6d. to 2s. 9d. per lb.

PHENAZONE.—4s. to 4s. 3d. per lb.

PHENOLPHTHALEIN.—6s. to 6s. 3d. per lb.

POTASSIUM BITARTRATE 99/100% (Cream of Tartar).—102s. per cwt., less 2½ per cent.

POTASSIUM CITRATE.—B.P.C., 1911, 1s. 8d. to 1s. 11d. per lb.; U.S.P., 2s. 1d. to 2s. 4d. per lb.

POTASSIUM FERRICYANIDE.—1s. 9d. per lb., in cwt. lots.

POTASSIUM IODIDE.—16s. 8d. to 17s. 2d. per lb., according to quantity.

POTASSIUM METABISULPHITE.—6d. per lb., 1-cwt. kegs included, f.o.r. London.

POTASSIUM PERMANGANATE.—B.P. crystals, 5½d. per lb., spot.

QUININE SULPHATE.—1s. 8d. to 1s. 9d. per oz., bulk in 100 oz. tins.

RESORCIN.—2s. 10d. to 3s. per lb., spot.

SACCHARIN.—55s. per lb.; in quantity lower.

SALOL.—2s. 4d. per lb.

SODIUM BENZOATE, B.P.—1s. 8d. to 1s. 11d. per lb.

SODIUM CITRATE, B.P.C., 1911.—1s. 10d. to 2s. 1d. per lb., B.P.C., 1923—2s. 2d. to 2s. 3d. per lb. for 1-cwt. lots. U.S.P., 2s. 1d. to 2s. 3d. per lb., according to quantity.

SODIUM FERROCYANIDE.—4d. per lb., carriage paid.

SODIUM HYPOSULPHITE, PHOTOGRAPHIC.—£15 per ton, d/d consignee's station in 1-cwt. kegs.

SODIUM NITROPRUSSIDE.—16s. per lb.

SODIUM POTASSIUM TARTRATE (ROCHELLE SALT).—90s. to 95s. per cwt. Crystals, 5s. per cwt. extra.

SODIUM SALICYLATE.—Powder, 1s. 7d. to 1s. 9d. per lb. Crystal, 1s. 8d. to 1s. 10d. per lb.

SODIUM SULPHIDE, PURE RECRYSTALLISED.—10d. to 1s. 1d. per lb.

SODIUM SULPHITE, ANHYDROUS.—£27 10s. to £28 10s. per ton, according to quantity. Delivered U.K.

SULPHONAL.—6s. 9d. to 7s. per lb.

TARTAR EMETIC, B.P.—Crystal or powder, 2s. to 2s. 3d. per lb.

THYMOL.—Puriss., 9s. 6d. to 9s. 9d. per lb., according to quantity. Firmer. Natural, 14s. 3d. per lb.

Perfumery Chemicals

ACETOPHENONE.—7s. per lb.

AUBEPINE (EX ANETHOL).—11s. per lb.

AMYL ACETATE.—2s. per lb.

AMYL BUTYRATE.—4s. 9d. per lb.

AMYL SALICYLATE.—2s. 9d. per lb.

ANETHOL (M.P. 21/22° C.).—5s. 6d. per lb.

BENZYL ACETATE FROM CHLORINE-FREE BENZYL ALCOHOL.—2s. per lb.

BENZYL ALCOHOL FREE FROM CHLORINE.—2s. per lb.

BENZALDEHYDE FREE FROM CHLORINE.—2s. 6d. per lb.

BENZYL BENZOATE.—3s. per lb.

CINNAMIC ALDEHYDE NATURAL.—15s. 6d. per lb.

COUMARIN.—10s. per lb.

CITRONELLOL.—13s. 6d. per lb.

CITRAL.—8s. 3d. per lb.

ETHYL CINNAMATE.—6s. per lb.

ETHYL PHTHALATE.—3s. per lb.

EUGENOL.—8s. 3d. per lb.

GERANIOL (PALMAROSA).—18s. 6d. per lb.

GERANIOL.—6s. to 10s. per lb.

HELIOTROPINE.—4s. 6d. per lb.

ISO EUGENOL.—13s. per lb.

LINALOL.—Ex Bois de Rose, 15s. per lb. Ex Shui Oil, 10s. 6d. per lb.

LINALYL ACETATE.—Ex Bois de Rose, 8s. 6d. per lb. Ex Shui Oil, 14s. 6d. per lb.

METHYL ANTHRANILATE.—8s. 6d. per lb.

METHYL BENZOATE.—4s. per lb.

MUSK KETONE.—35s. per lb.

MUSK XYLOL.—7s. per lb.

NEROLIN.—4s. 6d. per lb.

PHENYL ETHYL ACETATE.—11s. per lb.

PHENYL ETHYL ALCOHOL.—10s. 6d. per lb.

RHODINOL.—32s. 6d. per lb.

SAFROL.—1s. 6d. per lb.

TERPINEOL.—1s. 8d. per lb.

VANILLIN.—16s. 6d. per lb.

Essential Oils

ALMOND OIL.—Foreign S.P.A., 10s. 6d. per lb.

ANISE OIL.—2s. 9d. per lb.

BERGAMOT OIL.—26s. per lb.

BOURBON GERANIUM OIL.—14s. 6d. per lb.

CAMPOR OIL.—9d. per lb.

CANANGA OIL, JAVA.—13s. 3d. per lb.

CINNAMON OIL LEAF.—6s. 9d. per lb.

CASSIA OIL, 80/85%.—7s. 9d. per lb.

CITRONELLA OIL.—Java, 1s. 10d. per lb., c.i.f. U.K. port. Ceylon, pure, 1s. 9d. per lb.

CLOVE OIL.—5s. 6d. per lb.

EUCALYPTUS OIL, AUSTRALIAN.—2s. 1d. per lb.

LAVERANDER OIL.—Mont Blanc, 38/40%, Esters, 15s. 9d. per lb.

LEMON OIL.—9s. 6d. per lb.

LEMONGRASS OIL.—4s. per lb.

ORANGE OIL, SWEET.—12s. 9d. per lb.

OTTO OF ROSE OIL.—Anatolian, 35s. per oz. Bulgarian, 62s. 6d. per oz.

PALMA ROSA OIL.—12s. 6d. per lb.

PEPPERMINT OIL.—Wayne County, 15s. 9d. per lb.; Japanese, 7s. 3d. per lb.

PETITGRAIN.—7s. 3d. per lb. Sandalwood, Mysore, 26s. 6d. per lb., 90/95%, 16s. 6d. per lb.

London Chemical Market

The following notes on the London Chemical Market are specially supplied to THE CHEMICAL AGE by Messrs. R. W. Greeff & Co., Ltd., and Messrs. Chas. Page & Co., Ltd., and may be accepted as representing these firms' independent and impartial opinions.

London, March 8, 1928.

DEMAND has been fairly active during the last week and prices remain steady. Export trade is still maintained.

General Chemicals

ACETONE is steady and in good demand at £64 to £66 per ton.
ACID ACETIC remains unchanged at £37 to £38 per ton, with firm position.
ACID CITRIC is unchanged, market nominal at 1s. 11d., less 5%.
ACID FORMIC.—The demand remains fair at about £47 per ton for 85%.
ACID LACTIC.—Unchanged.
ACID OXALIC.—The position is firm and there is a good demand. Price unchanged at £30 10s. per ton.
ACID TARTARIC.—The position is still firm with the price unchanged at 1s. 4½d. to 1s. 5d. per lb. There is little more demand.
ALUMINA SULPHATE is in good demand. Price firm at £5 15s. for 17/18%.
AMMONIUM CHLORIDE.—Unchanged.
ARSENIC.—Unchanged.
BARIUM CHLORIDE.—Remains steady at about £8 per ton.
COPPER SULPHATE.—Unchanged.
CREAM OF TARTAR.—Supplies are short and demand is good. Position is gradually becoming firmer and firmer. Price £100 per ton for 99%, B.P., and still higher prices are expected in the near future.
EPSOM SALTS.—Unchanged.
FORMALDEHYDE is in good demand. Price a little easier at £40 per ton.
LEAD ACETATE.—Demand is rather slow, with prices unchanged at £42 per ton for white, with £1 per ton less for brown.
LIME ACETATE.—Unchanged.
METHYL ACETONE.—The demand is fair at about £55 per ton for 40-45%.
POTASSIUM CAUSTIC AND CARBONATE.—Unchanged.
POTASSIUM CHLORATE.—Demand continues good. Price unchanged at £29 to £30 per ton.
POTASSIUM PERMANGANATE.—The demand has improved, price unchanged at 5d. to 5½d. per lb. for B.P.

POTASSIUM PRUSSATE.—The demand is improving, price unchanged at £59 to £63 per ton, according to quantity.

SODIUM ACETATE.—Supplies are still very short for near delivery, and price is firm at £21 10s. to £22 10s. per ton.

SODIUM BICHROMATE.—The demand is slightly improved at British makers' prices.

SODIUM CHLORATE remains unchanged at £28 to £30 per ton, position firm.

SODA HYPOSULPHITE.—Unchanged.

SODA NITRITE.—Unchanged at £20 10s. per ton, with active demand and firm position.

SODA PHOSPHATE.—Unchanged.

SODA PRUSSATE remains firm at 4½d. per lb.

SODA SULPHIDE.—Unchanged.

TARTAR EMETIC is firm at 11½d. to 11¾d. per lb., with supplies becoming short.

ZINC SULPHATE.—Unchanged.

Coal Tar Products

The market for coal tar products remains quiet, and there is little change to report in prices from last week.

90's BENZOL is unchanged, at about 1s. 3d. to 1s. 4d. per gallon, while the motor quality is quoted at 1s. 1d. to 1s. 2d. per gallon. PURE BENZOL is worth about 1s. 5½d. to 1s. 6½d. per gallon, on rails.

CREOSOTE OIL is rather quiet, and can be bought at 7½d. per gallon on rails in the North, and at 8d. per gallon in London.

CRESYLIC ACID is unchanged from last week, the 98/100% quality being quoted at 2s. 8d. per gallon, at works, naked, and the dark quality 95/97% at 2s. 2d. per gallon.

SOLVENT NAPHTHA is very weak, and can be bought at about 8d. per gallon on rails in the provinces.

HEAVY NAPHTHA is also in poor demand, and can be bought at 9d. to 9½d. per gallon, on rails.

NAPHTHALENES are unchanged, the 74/76 quality being quoted at about £7 per ton, while the 76/78 quality is quoted at £8 to £8 10s. per ton.

PITCH is steady, to-day's value is 60s. to 65s. per ton f.o.b. U.K. port.

Latest Oil Prices

LONDON, March 7.—LINSEED OIL quiet. Spot, ex mill, £28 10s.; March, £27 7s. 6d.; March-April, £27 12s. 6d.; May-August, £28 15s.; September-December, £29 10s. RAPE OIL slow. Crude, extracted, £42; technical, refined, £44, naked, ex wharf. COTTON OIL quiet. Refined common edible, £40; Egyptian, crude, £35 10s.; deodorised, £42 per ton. TURPENTINE inactive. American, spot, 40s. 3d.; April, 40s. 6d.; May-June, 40s. 9d.; July-December, 41s. 6d. per cwt.

HULL, March 7.—LINSEED OIL.—Spot and March, £28 5s.; April, £28 10s.; May-August, £28 15s.; September-December, £29 7s. 6d. per ton, naked. COTTON OIL.—Bombay, crude, £31 10s.; Egyptian, crude (new), £33 15s.; edible, refined, £37 10s.; technical, £35 10s.; deodorised, £39 10s. per ton, naked. PALM KERNEL OIL.—Crushed, 5½ per cent., £37 10s. per ton, naked. GROUNDNUT OIL.—Crushed/extracted, £42; deodorised, £46 per ton. SOYA OIL.—Extracted and crushed, £32 10s.; deodorised, £36 per ton. RAPE OIL.—Crude/extracted, £40 10s.; refined, £42 10s. per ton. TURPENTINE, CASTOR OIL, and COD OIL unchanged.

Nitrogen Products

Export.—Demand for sulphate of ammonia has been good in all countries, and the price remains firm at £10 to £10 2s. 6d. per ton f.o.b. U.K. port in single bags, for early shipment. There is still very little inquiry for forward positions.

Home.—Merchants in all parts of the country report a very good demand for sulphate. This applies particularly to the South of England, where the season is earlier. It is understood that producers are hard put to it to meet the requirements of merchants. The price continues unchanged, with no likelihood whatever of any change while the season lasts.

Nitrate of Soda.—The nitrate position continues quiet. On account of the very heavy purchases in the autumn, most of the consuming countries are well stocked, and there is very little inquiry for prompt shipment. The price f.a.s. Chile remains in the vicinity of 16s. 6d. per metric quintal.

South Wales By-Products

THERE is a slight improvement in South Wales by-product activities, and values are better in general. Pitch has a fairly steady demand, with prices unchanged, the tendency being to rise. Refined tars are in good demand, with no change in prices, while crude tar continues to sell round about 60s per ton, maker's works. Solvent and heavy naphthas are in better demand, solvent being from 9d. to 1s. 1d. per gallon, and heavy naphtha from 9d. to 1s. per gallon. Patent fuel and coke exports continue on a moderate scale. Patent fuel for export from Cardiff ranges from 22s. to 23s. 6d. per ton, while 21s. to 21s. 6d. per ton is obtained in Swansea. There is no change in coke, best foundry ranging from 32s. 6d. to 37s., and other sorts from 25s. to 32s. 6d. per ton.

Calcium Cyanamide 19 per Cent. N

ADVANCE inquiries and demands for immediate delivery are increasing steadily. The farmers' price for March delivery for 4-ton lots is £9 per ton, carriage paid to any railway station in Great Britain.

Citrate Prices Increase

MAY AND BAKER, LTD., of Battersea, advise an increase in the price of citrates, which are now quoted as follows:—

	LIST.	28 LBS.
Potassium Citrate, B.P.	2s. 6d.	2s. 5d. 1b.
Sodium Citrate, B.P.C. 1923	2s. 6d.	2s. 5d. "
" " " 1911	2s. 3d.	2s. 2d. "
Iron Citrate and Ammonia, B.P.	2s. 8d.	2s. 7d. "
" " " Green scales	3s. 1d.	3s. 0d. "

[Nitrate Shares in Will]

THE LARGEST NITRATE transaction of recent years is indicated by the announcement of the will of the late Señor Frederico Santa Maria, which directs the disposal of 55 per cent. of the shares in the Alianza Nitrate Co., valued at 22,000,000 pesos (about £4,400,000). The proceeds of the sale will be devoted to the building of a technical school and many other public institutions at Valparaiso.

Scottish Chemical Market

The following notes on the Scottish Chemical Market are specially supplied to THE CHEMICAL AGE by Messrs. Charles Tennant and Co., Ltd., Glasgow, and may be accepted as representing the firm's independent and impartial opinions.

Glasgow, March 7, 1928.

THE heavy chemical market has been moderately active during the past week, the bulk of inquiry received being for prospective export business. There are no notable changes in prices to record.

Industrial Chemicals

ACETONE, B.G.S.—£63 to £66 per ton, ex store, according to quantity.

ACID, ACETIC.—98/100%, glacial, £56 to £67 per ton, according to quality and packing, c.i.f. U.K. ports; 80%, pure, £37 10s. per ton, ex wharf; 80%, technical, £37 10s. per ton, ex wharf.

ACID, BORIC.—Crystals, granulated or small flakes, £30 per ton; powdered, £32 per ton, packed in bags, carriage paid U.K. stations.

ACID, CARBOLIC, ICE CRYSTALS.—Quoted 6½d. per lb., f.o.b. U.K. ports.

ACID, HYDROCHLORIC.—Usual steady demand. Arsenical quality, 4s. per carboy. Dearsenicated quality, 5s. 6d. per carboy, ex works, full wagon loads.

ACID, NITRIC.—80° quality, £24 10s. per ton, ex station, full truck loads.

ACID, OXALIC, 98/100%.—On offer from the Continent at 3½d. per lb., ex wharf. Spot material quoted 3½d. per lb., ex store. In better demand.

ACID, SULPHURIC.—£2 15s. per ton, ex works, for 144° quality; £5 15s. per ton for 168° quality. Dearsenicated quality, 20s. per ton extra.

ACID, TARTARIC, B.P. CRYSTALS.—Now quoted 1s. 4½d. per lb., less 5%, ex wharf. Demand rather easier.

ALUMINA, SULPHATE, 17/18%, IRON FREE.—Spot material on offer at £5 15s. per ton, ex store. Quoted £5 5s. per ton, c.i.f. U.K. ports, prompt shipment.

ALUM, LUMP POTASH.—Continental material on offer at £8 7s. 6d. per ton, c.i.f. U.K. ports. Crystal meal about the same figure. Lump quality on spot quoted £9 2s. 6d. per ton, ex store.

AMMONIA, ANHYDROUS.—Unchanged at about 9d. per lb., carriage paid. Containers extra and returnable.

AMMONIA CARBONATE.—Lump £37 per ton; powdered, £39 per ton, packed in 5 cwt. casks, delivered or f.o.b. U.K. ports.

AMMONIA, LIQUID, 880°.—Unchanged at about 2½d. to 3d. per lb. delivered, according to quantity.

AMMONIA MURIATE.—Grey galvanisers' crystals of British manufacture unchanged at £23 to £24 per ton, ex station. Continental on offer at £19 15s. per ton, c.i.f. U.K. ports. Fine white crystals quoted £17 10s. per ton, c.i.f. U.K. ports.

ARSENIC, WHITE POWDERED.—Rather cheaper at about £19 7s. 6d. per ton, ex wharf, prompt despatch from mines. Spot material available at £20 10s. per ton, ex store.

BARIUM CARBONATE, 98/100%.—English material on offer at £7 5s. per ton, ex store. Continental quoted £7 per ton, c.i.f. U.K. ports.

BARIUM CHLORIDE, 98/100%.—Large white crystals quoted £6 17s. 6d. per ton, c.i.f. U.K. ports.

BLEACHING POWDER.—British manufacturers' contract price to consumers, £6 12s. 6d. per ton, delivered, minimum four-ton lots. Continental on offer at £6 10s. per ton, ex wharf.

CALCIUM CHLORIDE.—British manufacturers' price, £4 15s. per ton to £5 5s. per ton, ex station, according to quantity and point of delivery. Continental material quoted £3 12s. 6d. per ton, c.i.f. U.K. ports.

COPPERAS, GREEN.—Unchanged at about £3 10s. per ton, f.o.r. works, or £4 12s. 6d. per ton, f.o.b. U.K. ports, for export.

COPPER SULPHATE.—Now on offer from the Continent at about £25 per ton, c.i.f. U.K. ports. British material quoted £26 per ton, ex store.

FORMALDEHYDE, 40%.—Offered at £35 10s. per ton, c.i.f. U.K. ports. Spot material quoted £39 per ton, ex store.

GLAUBER SALTS.—English material unchanged at £4 per ton, ex store or station. Continental quoted £2 15s. per ton, c.i.f. U.K. ports.

LEAD, RED.—Imported material on offer at £31 per ton, ex store.

LEAD, WHITE.—Quoted £31 10s. per ton, ex store.

LEAD ACETATE.—White crystals quoted £39 15s. per ton, c.i.f. U.K. ports; brown, £38 10s. per ton, c.i.f. U.K. ports. Spot material on offer at £42 15s. per ton, ex store, spot delivery.

MAGNESITE, GROUND CALCINED.—Quoted £8 10s. per ton, ex store, in moderate demand.

METHYLATED SPIRIT.—Industrial quality 64 o.p. reduced by 3d. per gallon. Now quoted 2s. per gallon, delivered.

POTASSIUM BICHROMATE.—4½d. per lb., delivered, minimum 4-ton lots. Under 4-ton lots, ½d. per lb. extra.

POTASSIUM CARBONATE, 96/98%.—Rather scarce for immediate delivery. Quoted £25 10s. per ton, ex wharf. Spot material about £26 10s. per ton, ex store.

POTASSIUM CHLORATE, 99/100%.—Powdered material offered from the Continent at £25 10s. per ton, c.i.f. U.K. ports. Crystals, 30s. per ton more.

POTASSIUM NITRATE.—Refined granulated quality quoted £19 2s. 6d. per ton, c.i.f. U.K. ports. Spot material on offer at about £20 10s. per ton, ex store.

POTASSIUM PERMANGANATE, B.P. CRYSTALS.—Quoted 5½d. per lb., ex wharf.

POTASSIUM PRUSSIAN (YELLOW).—Unchanged at about 6½d. per lb., ex store, spot delivery. Offered from the Continent at 6½d. per lb.

SODA CAUSTIC.—Powdered, 98/99%, £17 17s. 6d. per ton; solid, 76/77%, £14 10s. per ton; 70/72, £13 12s. 6d. per ton, minimum 4-ton lots, carriage paid on contract. Spot material, 10s. per ton extra.

SODIUM ACETATE.—In good demand and spot material scarce. Quoted £20 5s. per ton, ex store.

SODIUM BICARBONATE.—Refined recrystallised, £10 10s. per ton, ex quay or station. M.W. quality, 30s. per ton less.

SODIUM BICHROMATE.—Quoted 3d. per lb., delivered buyers' works, minimum 4-ton lots. Under 4 and over 2-ton lots, 3½d. per lb.; under 2-ton lots, 3½d. per lb.

SODIUM CARBONATE (SODA CRYSTALS).—£3 to £5 5s. per ton, ex quay or station. Powdered or pea quality, 27s. 6d. per ton extra.

SODIUM HYPOSULPHITE.—Large crystals of English manufacture quoted £8 17s. 6d. per ton, ex station, minimum 4-ton lots. Pea crystals on offer at £14 15s. per ton, ex station, minimum 4-ton lots.

SODIUM NITRATE.—Quoted £11 per ton, ex store.

SODIUM NITRITE, 100%.—Quoted £19 10s. per ton, ex store.

SODIUM PRUSSIAN (YELLOW).—In moderate demand and price unchanged at about 4½d. per lb., ex store. Offered for prompt shipment from the Continent at 4½d. per lb., ex wharf.

SODIUM SULPHATE (SALTCAKE).—Prices, 50s. per ton, ex works for unground quality, 52s. 6d. per ton, delivered. Ground quality, 2s. 6d. per ton extra.

SODIUM SULPHIDE.—Prices now as follows:—Solid, 60/62%, £9 per ton; broken, 60/62%, £10 per ton; crystals, 30/32%, £9 2s. 6d. per ton, delivered buyers' works on contract, minimum 4-ton lots. Special prices for some consumers. Spot material, 5s. per ton extra.

SULPHUR.—Flowers, £12 per ton; roll, £10 15s. per ton; rock, £10 12s. 6d. per ton; floristella, £9 10s. per ton; ground American, £9 5s. per ton, ex store. Prices nominal.

ZINC CHLORIDE.—British material, 98/100%, quoted £24 15s. per ton, f.o.b. U.K. ports; 98/100%, solid, on offer from the Continent at about £21 15s. per ton, c.i.f. U.K. ports. Powdered, 20s. per ton extra.

ZINC SULPHATE.—Continental material quoted £11 15s. per ton, ex wharf.

NOTE.—The above prices are for bulk business and are not to be taken as applicable to small parcels.

Saleable Fertiliser Material from Sewage

A SEWAGE disposal plant constructed by the City of Pasadena, California, some months ago, is now producing and selling a fertiliser material known as "Nitrogran," almost identical in both analysis and action with "Milorganite," manufactured by the City of Milwaukee. The plant is not as large as the Milwaukee plant but turns out about 40 tons per week. The analysis of the material is as follows:—

	Per cent.
Organic matter	65
Mineral matter	35
Organic nitrogen	5.4
Total phosphoric acid	2.4
Available phosphoric acid	2.0
Potash	0.3
Moisture	Less than 10

This analysis is somewhat below the analysis found by the State Agricultural Department of California, and others.

Manchester Chemical Market

[FROM OUR OWN CORRESPONDENT.]

Manchester, March 8, 1928.

WHILST the general position of the chemical market here, from the point of view of prices, keeps steady, some slight weakness is to be observed in the case of one or two lines. Apart from contract deliveries, which continue to move off in fairly satisfactory quantities, the demand for chemical products at the moment is confined for the most part to relatively small parcels for prompt or early delivery. There is, however, a fair volume of inquiry in circulation, principally from consumers in the home trade.

Heavy Chemicals

Offers of bicarbonate of soda are still being made at round £10 10s., and a moderate movement of this material is reported. Only a comparatively quiet business is passing in the case of chlorate of soda, and values have an easy tendency at 2½d. per lb. Prussiate of soda is steadily maintained at from 4½d. to 4½d. per lb., according to quantity, and buying interest is on a moderate scale. Alkali is being quoted on the basis of £6 2s. 6d. per ton for contracts, and a fair trade is being met with. Caustic soda is moving off in fair quantities, and makers' offers continue to be made at from £13 7s. 6d. to £15 7s. 6d. per ton, according to quality. Phosphate of soda is currently quoted at about £12 5s. per ton, with the demand on quiet lines. Inquiry for hyposulphite of soda is of limited extent, but prices are steady, photographic being quoted at about £16 10s. per ton, and commercial at £9 5s. Sulphide of sodium is attracting little attention, and quotations are easy, with the 60-65 per cent. concentrated solid quality on offer at £9 10s. per ton and the commercial at from £7 5s. to £7 10s. There is a quiet demand about for saltcake, and values are steady at about £2 12s. 6d. per ton in contract deliveries. Nitrate of soda is fully maintained at up to £19 5s. per ton, and a moderate amount of inquiry is reported. A fair demand is about for bleaching powder, and prices are held at round £7 per ton. With regard to bichromate of soda, a moderate business is being done at from 3½d. to 3½d. per lb.

Caustic potash continues firm at £33 5s. per ton for prompt delivery of one to five-ton parcels, and a fair inquiry is reported. Offers of carbonate of potash are in the neighbourhood of £25 to £25 5s. per ton, and a quiet trade is going through. There is a moderate movement of bichromate of potash, which keeps steady at about 4½d. per lb. Chlorate of potash is moving off in comparatively small quantities at about 3d. per lb. Yellow prussiate of potash is fairly steady at 6½d. per lb., but sales are on the slow side. Permanganate of potash meets with a quiet demand, at prices which show little change from last report, B.P. quality being quoted at 5½d. to 5½d. per lb., and the commercial at 4½d.

The undertone in the case of arsenic seems to be fairly steady just now, and a moderate business is being put through at from £17 5s. to £17 10s. per ton, on rails for white powdered, Cornish makes. Sulphate of copper is fully maintained at about £26 15s. per ton, f.o.b., and buying interest in this material keeps up. Current offers of acetate of lime are at £16 to £16 5s. per ton for grey, and about £10 5s. for brown, with the demand this week rather slow. Inquiry for acetate of lead is on quiet lines, but values remain at £40 per ton for white and £38 to £39 for brown quality. Nitrate of lead is in limited request at round £37 per ton.

Acids and Tar Products

Citric acid keeps up at about 1s. 11d. per lb., and a moderate business is being done; tartaric acid is in a similar position at 1s. 4½d. per lb. With regard to acetic acid, this is in steady demand, and values are held at about £66 per ton for glacial and £37 10s. for 80 per cent. commercial. Oxalic acid is quoted at from 3½d. to 3½d. per lb., and a fair inquiry is reported.

There is still only a quiet trade passing in pitch, which is quoted this week at £3 to £3 2s. 6d. per ton, f.o.b. Creosote oil is in moderate request, with offers in the neighbourhood of 7½d. per gallon. Solvent naphtha is rather low, but values are without change, about 10½d. per gallon being quoted today. Crude carbolic acid is offered at about 2s. 4d. per gallon, with crystallised material quoted at 6½d. per lb.

Soap Company's Affairs

ON Wednesday, at the Board of Trade offices, 33, Carey Street, London, the statutory meetings of the creditors and of the shareholders were held in the compulsory liquidation of the Standard Soap Co., Ltd., of the Castle Soap Works, Derby Road, Ashby-De-La-Zouch. The winding-up order was made on January 30 on the petition of W. Cornish and Co., Ltd., in voluntary liquidation, stated to be creditors for £20,995. According to a draft statement of affairs, the total of the liabilities was £31,491, in addition to which there was a debenture debt with interest which amounted to £26,500. Mr. H. A. McCann, who had been appointed receiver on behalf of debenture holders, had entered into a contract of sale of the whole of the assets for £29,000, payable in cash, and the Official Receiver said that he feared that the unsecured creditors must see their hopes go, unless the liquidator appointed could discover other assets which might emerge. But he must say that as at present advised, any such assets were entirely mythical. A resolution for the appointment of a liquidator was not carried, and the liquidation accordingly remained in the hands of the Official Receiver. A committee of inspection was nominated.

Annual Meeting of the Institute of Metals

DIFFICULT technical terms used by metallurgists were defended by Dr. W. Rosenhain, in his presidential address to the Institute of Metals, at the Institution of Mechanical Engineers on Wednesday. Dr. Rosenhain took the chair at the annual dinner and dance at the Trocadero Restaurant in the evening.

Mr. H. T. Tizard, secretary of the Department of Scientific and Industrial Research, proposing the toast of "The Institute of Metals," referred to the growing influence of metallurgy on all forms of industrial progress. Dr. Rosenhain, in his reply, said that while they were a British body, working for the advancement of science and industry in this country, they realised that that advancement could only be achieved in full measure if carried out in cordial co-operation with eminent and successful workers in other countries.

The toast of "The Guests" was proposed by Mr. A. H. Munday, and was replied to by Sir Richard Glazebrook. Among those who were present were Sir Frank Heath, Sir Alexander Gibb, Mr. F. H. Carr, Professor D. Hanson, Sir Joseph Petavel and Professor C. H. Desch.

Colloid Chemistry of Paints

IN 1920 the Department of Scientific and Industrial Research, in conjunction with the British Association, issued their "Third Report on Colloid Chemistry," which contained a section dealing with paints, pigments, and varnishes, by Dr. R. S. Morrell. During the seven years that have since elapsed, a good deal of further work on the subject has been carried out, and Dr. Morrell and Mr. W. E. Wornum have recently been engaged in amplifying and revising their section of the report, in view of the prospect of publication of a new edition of the "Reports on Colloid Chemistry." Unfortunately it has now been decided to abandon publication of this revised edition, owing to unforeseen difficulties, and Dr. Morrell and Mr. Wornum have placed their MS. at the disposal of the Oil and Colour Chemists' Association. It has been decided to publish it in the Association's *Journal*, in two sections, the first of which appears in the February number.

Artificial Silk in Belgium

THERE are now eight artificial silk factories in Belgium. Those belonging to the Tubize group are producing daily 4,000-5,000 kg. of Chardonnet silk, 4,000 kg. of viscose, and 2,000 kg. of acetate silk. The Alost group (connected with the French Comptoir) has in its three factories a daily capacity of about 8,000 kg. (3,000 kg. Chardonnet and 5,000 kg. viscose). The Obourg-Textiles group produces about the same quantity. The Société Générale de Soie Artificielle per le Procédé Viscose is busy with the development of its production of "Celta" silk.

Company News

NORTH BROKEN HILL MINES.—A dividend of 2s. per share is announced.

AUSTRALIAN COMMONWEALTH CARBIDE CO.—A dividend of 4 per cent. has been declared by the company on the preferred ordinary shares.

PENNSYLVANIA WATER AND POWER.—For the quarter ending March 31, a dividend has been declared on the common shares of $\$ \frac{3}{8}$ per share, payable on April 2.

TORBAY PAINT CO.—The net profits for the past year were £8,433, and £1,275 was brought forward. A dividend of $12 \frac{1}{2}$ per cent. is proposed, carrying forward £1,317.

INDESTRUCTIBLE PAINT CO.—The board have resolved that a dividend of 10 per cent., less tax, be recommended in respect of the year ended December 31 last, payable on March 31.

BRITISH PORTLAND CEMENT MANUFACTURERS.—A final dividend on the ordinary shares of 10 per cent., less tax, making 15 per cent. for the year, as against $12 \frac{1}{2}$ per cent. for 1926, is to be recommended at the general meeting.

MELSO ARTIFICIAL SILK MANUFACTURERS.—The net profits for the year 1927 amounted to £30,260, and £8,540 was brought forward. A dividend of $7 \frac{1}{2}$ per cent. is proposed on the ordinary shares, adding to the reserve £2,979, and carrying forward £9,208.

BRITISH METAL CORPORATION, LTD.—The net profit for the year to December 31, 1927, after appropriating £50,000 to reserve account, is £145,454, which, with £23,278 brought forward, makes a total of £168,732. The preference dividends absorb £54,000 and the directors now recommend a dividend of 10 per cent. on the ordinary shares, less income tax, leaving to be carried forward, £24,732.

CEREROS CO.—For the twelve months to November 30, 1927, the profits amount to £151,429, an increase of £53,120. A dividend of 25 per cent., tax free, is recommended on the capital as increased by the share bonus of $33 \frac{1}{3}$ per cent. distributed last October. For the preceding year a dividend of 20 per cent. was paid on the then smaller capital. A sum of £30,000 is placed to reserve and the carry forward is increased from £30,332 to £51,761.

ASSOCIATED PORTLAND CEMENT MANUFACTURERS.—The directors announce that they are recommending at the forthcoming general meeting the payment of a dividend on the ordinary shares of 8 per cent. for the year ended December 31, 1927, as against 4 per cent. for 1926. A resolution will be submitted providing for an increase in the capital of the company from £5,000,000 to £6,000,000 by the creation of 1,000,000 additional ordinary shares of £1 each.

UNITED TURKEY RED CO.—After providing for repairs, depreciation, all charges and contingencies, the profit for 1927 amounted to £178,428, which, with £36,938 brought forward, makes a total of £215,366. A sum of £15,000 has been provided for income-tax, and after meeting preference share dividends and the interim ordinary dividend, the directors recommend a final dividend on the ordinary shares at the rate of 7 per cent., less tax, making 10 per cent. for the year, placing £40,000 to general reserve, and carrying forward £50,052.

EVANS SONS, LESCHER AND WEBB.—For the year ended December 31, 1927, the report states that the capital reserve has been augmented by £1,248 out of reserves not now required. Mortgages have been reduced by £500, and the mortgage redemption fund increased by £1,078. The trading profit for the period, after writing off all establishment expenses, and making provision for depreciation and bad and doubtful debts, amounts to £20,984. It is proposed to pay a 6 per cent. dividend on the preference shares up to June 30, 1927, and to carry forward £7,599.

YORKSHIRE INDIGO, SCARLET AND COLOUR DYERS.—At the annual meeting on Monday, the chairman referred to the difficulties which the textile trade was still experiencing owing to the serious competition from foreign imports, and reiterated his opinion that the protection of the Safeguarding of Industries Act should be granted to the woollen and worsted industries. The report was adopted, and a dividend of 5 per cent. per annum on the preference shares for the two years to December 31 last, and a dividend of $2 \frac{1}{2}$ per cent. on the ordinary shares, were sanctioned.

New Chemical Trade Marks

Applications for Registration

This list has been specially compiled for us from official sources by Gee and Co., Patent and Trade Mark Agents, Staple House, 51 and 52, Chancery Lane, London, W.C.2, from whom further information may be obtained, and to whom we have arranged to refer any inquiries relating to Patents, Trade Marks, and Designs.

Opposition to the registration of the following Trade Marks can be lodged up to March 22, 1928.



THREE FISHERMEN BRAND

487,171. Class 1. Chemical substances used in manufactures, photography, or philosophical research, and anti-corrosives.

487,172. Class 4. Raw, or partly prepared vegetable, animal, and mineral substances used in manufactures not included in other Classes. Naylor Brothers (London), Ltd., Wexham Road, Slough, Buckinghamshire; paint, enamel, and distemper manufacturers. December 31, 1927. (To be associated, Section 24.)

VIKING.

487,317. Class 1. Paints, varnishes, anti-corrosive and anti-fouling compositions, but not including dyes, and not including any goods of a like kind to dyes. Navigation Paint Co., Ltd., 2, James Street, Cardiff; paint manufacturers. January 6, 1928.

WIZARD.

487,131. Class 1. Chemical substances used in manufactures, photography, or philosophical research, and anti-corrosives, but not including mineral dyes, and not including any goods of a like kind to mineral dyes. Setch Manufacturing Co., Ltd., 80, Bishopsgate, E.C.2; manufacturers. December 29, 1927.

KAZOPHOS.

485,710. Class 2. Fertilisers. Diamond Fertiliser and Chemical Co., Ltd., County Insurance Buildings, Museum Street, York; fertiliser and chemical manufacturers. November 9, 1927. (To be associated, Section 24.)

LEVISSIMA.

486,570. Class 3. Chemical substances prepared for use in medicine and pharmacy. The Washington Chemical Co., Ltd., Station Road, Washington Station, Durham; manufacturers. December 7, 1927.

Chemical Trade Inquiries

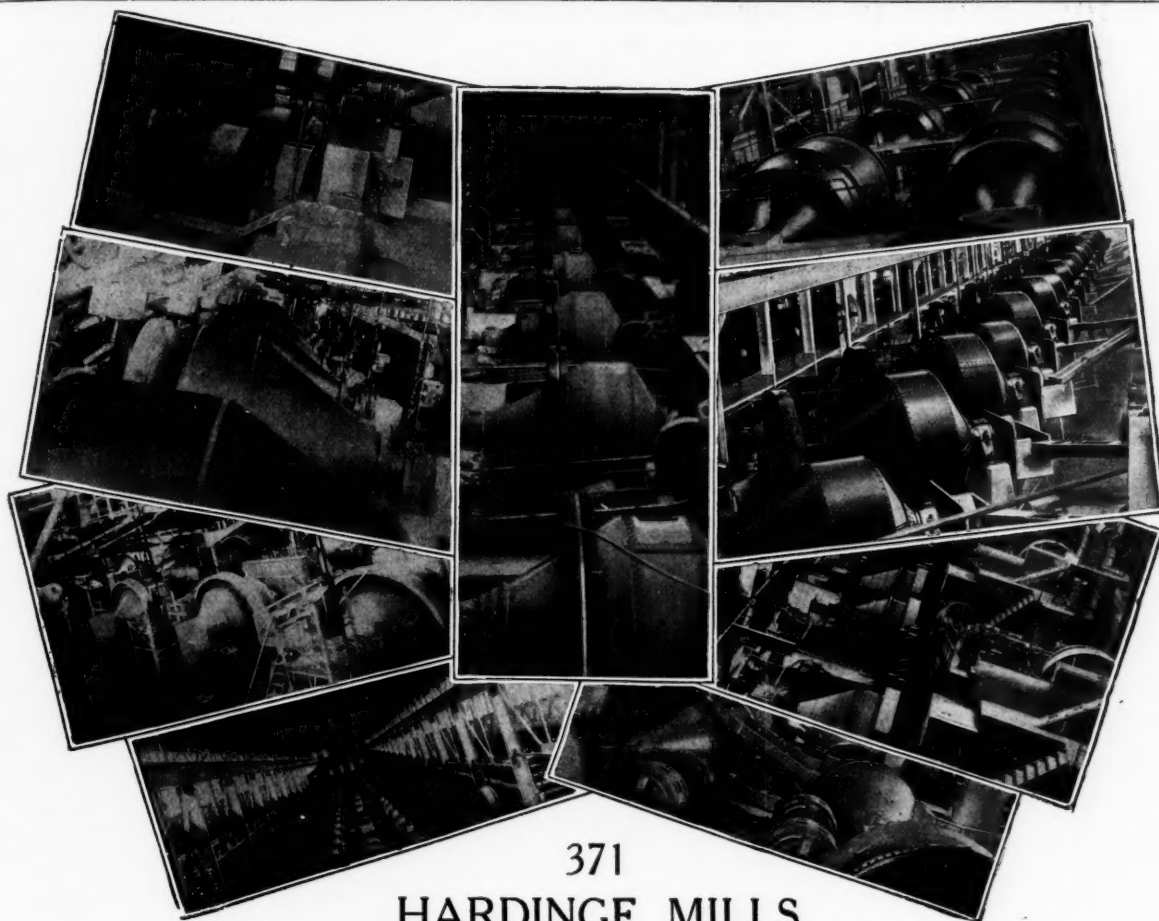
The following inquiries, abstracted from the "Board of Trade Journal," have been received at the Department of Overseas Trade (Development and Intelligence), 35, Old Queen Street, London, S.W.1. British firms may obtain the names and addresses of the inquirers by applying to the Department (quoting the reference number and country), except where otherwise stated.

CEMENT.—H.M. Consul at Kovno reports that a local service is calling for tenders for the supply of 6,500 barrels of cement. Tenders are to be presented by March 22, 1928. (Reference B.X. 4,255.)

LUBRICATING OILS, ETC.—The New Zealand Government Railway Department is calling for tenders, to be presented by April 17, 1928, for the supply of lubricating and gas-making oils. (Reference No. B.X. 4,258.)

Tariff Changes

CANADA.—The High Commissioner for Canada in London has received from the Department of National Revenue at Ottawa copies of a Memorandum containing particulars of the changes in the Canadian Customs Tariff, which went into force on February 16. Copies of the memorandum may be obtained on application to the Secretary, Office of the High Commissioner for Canada, The Canadian Building, Trafalgar Square, London, S.W.1.



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HARDINGE MILLS IN 9 INSTALLATIONS

WITH AN AVERAGE DAILY OUTPUT, SEVENTY THOUSAND TONS.

This will give you some idea of the preference for The Hardinge Mill in the Industrial Grinding Field.

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Hardinge Mills

Commercial Intelligence

The following are taken from printed reports, but we cannot be responsible for any errors that may occur.

London Gazette, &c.

Winding Up Petition

ANDERSON AND CO., LTD. (W.U.P., 10/3/28.) A creditors' petition for winding-up has been presented, and is to be heard at the Court House, Government Buildings, Victoria Street, Liverpool, at 10 a.m., March 16.

Companies Winding Up Voluntarily

ASSOCIATED ISINGLASS MANUFACTURERS, LTD. (C.W.U.V., 10/3/28.) By special resolutions, February 10, confirmed February 27. R. S. Ford, Audrey House, Ely Place, Holborn, E.C.1, and F. J. Higgin, 6, Devonshire Square, E.C.2, appointed as liquidators for the purposes of reconstruction.

DOLLOND AND CO., LTD. (C.W.U.V., 10/3/28.) By special resolution February 15, confirmed March 1. A. Barnsdale, F.C.A., appointed as liquidator. Meeting of creditors at the office of the Liquidator, Staple House, 51-52, Chancery Lane, London, W.C.2, on Tuesday, March 20, at 11 a.m.

NOTE.—This Notice is purely formal as all creditors have been, or will be, paid in full.

New Companies Registered

CALEDONIAN ELECTRO-CHEMICAL CO., LTD., 167, St. Vincent Street, Glasgow, C.2. Registered in Edinburgh on February 25. Nom. capital, £47,000 in 25,000 $7\frac{1}{2}$ per cent. cumulative participating preference and 20,000 ordinary shares of £1 each and 50,000 deferred shares of 1s. each. Manufacturers of antimony sulphide by the electro-chemical process, chemical, electrical, mechanical, heating, lighting, hydraulic, consulting and contracting engineers, manufacturing and consulting chemists, etc. Directors: A. B. Muirhead, D. Martin, C. O. Griffith, J. R. Rutherford, and R. M. Russell.

CENTRAL POLISH AND VARNISH WORKS, LTD., 53, New North Road, London, N.1. Registered March 2. Nom. capital, £500 in £1 shares. Manufacturers of all kinds of polishes, varnishes, lacquers, wax, wood stains, oils, japans, paints, enamels, pigments, cellulose, etc. Directors: K. J. R. Blythe and W. M. Easter.

ENGLISH AND FOREIGN FUEL CO., LTD., 16, St. Helen's Place, London. Registered March 1. Nom. capital, £1,100 in 1,000 5 per cent. cumulative participating preference shares of £1 each and 2,000 ordinary shares of 1s. each. To acquire and turn to account any invention in connection with the carbonisation of coal and substances commonly known as bituminous coals, semi-bituminous coals, anthracite and cannel coals, etc.

H. E. BURGESS AND CO., LTD., Glenville Grove, New Cross, London, S.E.8. Registered March 6. Nom. capital, £5,000 in £1 shares. Manufacturing chemists, etc. Directors: W. A. Giles, G. H. Narroay.

MILTON SALES, LTD., John Milton House, 125, Bunhill Row, London, E.C.1. Registered as a "public" company on March 5. Nom. capital, £201,000 in 100,000 8 per cent. cumulative preference and 100,000 ordinary shares of £1 each, and 20,000 deferred shares of 1s. each. To carry on the business of chemists, druggists, drysalters, oil and colourmen, manufacturers of and dealers in chemical, bleaching, pharmaceutical, medicinal, disinfecting, industrial, and other preparations and articles, etc. Directors: Col. Sir George M. Brown, D. M. Rogers, N. W. Wild, E. R. Alltree, F. J. Palmar.

MANLEY AND CO. (WOLVERHAMPTON), LTD., Phoenix Works, Green Lane, Wolverhampton. Registered February 25. Nom. capital, £1,000 in £1 shares. To acquire the business of lacquer manufacturers carried on by Manley Brothers at Green Lane, Wolverhampton, as "Manley and Co." Directors: C. H. Manley, G. S. Manley, and F. L. Manley.

PERONIA CO., LTD. Registered March 1. Nom. capital, £8,000 in £1 shares. To acquire the business of a manufacturing chemist carried on by W. E. Robinson at Derby Buildings, Long Row, Nottingham, as the "Robins's Company," together with the trade mark "Peronia." A subscriber, W. E. Robinson, 480, Mansfield Road, Nottingham.

STERLING GELATINE CO., LTD. Registered March 1. Nom. capital, £2,000 in £1 shares. Wholesale and retail dealers in glue, gelatine, chemicals and food products, etc. Directors: J. E. Bouchendhomme, 79, Guildford Street, London, W.C.1, and E. D. Davies.

THE BRITISH METALLISING CO., LTD., 1, London Wall Buildings, London, E.C. Registered as a public company on March 3. Nominal capital, £100,000 in 2s. shares. To acquire the whole of the assets of Precious Metal Industries, Ltd., including all the patents, benefits of certain option agreements and all other assets, to carry on the business of manufacturers and producers of and dealers in all kinds of metals, indiarubber, cellulose and any articles made or prepared wholly or partially with the said products; mining and mine owners, quarriers, ironfounders, mechanical engineers, etc., and to adopt an agreement with the said old company and the Rock Investment Co., Ltd. Directors: B. F. Congrave (director of British Cyanides Co., Ltd.), Sir Alan Burgoyne, Colonel J. Josselyn (director of British Cyanides Co., Ltd.), Lieut.-Colonel H. W. Hamlett, F. H. Rogers, S. Eumofopoulos, W. R. Pettit.

Chemical and Metallurgical Corporation's New Plant

RELATIVE to the new plant of the Chemical and Metallurgical Corporation, Ltd., Mr. F. Moore, 20, Copthall Avenue, London, in a letter to the *Financial News*, writes: "The new plant is working admirably and is producing the highest grade of hydrochloric acid, salt cake, and glauber salt. . . . The dye industry and the wood pulp industry are taking all that can be produced and clamouring for more. This plant is now being doubled. Furthermore, I am informed that towards the end of the month the first unit of the sulphuric acid plant will come into operation, and that a little later the platinum plant and the lead plant will be working, also that the erection of a zinc plant is being considered."

Explosion at Billingham Nitrate Factory

AS the result of an explosion in an oxidation plant at the Billingham factory of Synthetic Ammonia and Nitrates, Ltd., a workman named Llewelyn Evans, aged 24, of West Hartlepool, received injuries from which he died later in Stockton Hospital. Two other men suffered from shock, and some damage was done to the building in which the explosion occurred.

Benn Brothers' Other Journals

THE CABINET MAKER.—Conveying Appliances for the Trade; Income-tax and the Cabinet Makers; Textiles in Furnishing; Trade Opinions on Hire Purchase.

THE ELECTRICIAN.—"Economical Design of Loaded Telegraph Cables," by E. S. Heurtley; "Insulating Oils for High Voltage Cables," by T. N. Riley and T. R. Scott; "The Electric Shop's Counter," by A. E. Hammond.

THE FRUIT GROWER.—"The Production of Better Fruit—III," by a Worker; "Current Fruit Practice: Cold Storage," by E. M. Bear; Association Affairs.

GARDENING ILLUSTRATED.—Plant Hunting in Crete; Gladioli to Plant Now; Flowers of Early Spring; New Heads on Old Shoulders; Grafting Standard Apples.

THE GAS WORLD.—Maintenance Number; Liverpool Gas Company's Maintenance Scheme; R. H. Ginman on "Developments at Leek Gasworks."

THE HARDWARE TRADE JOURNAL.—Household Appliances; Displays and Demonstrations; The Students' Notebook; Some Criticisms of the British Industries Fair; Annual Meeting of the Institute of Metals.

THE TIMBER TRADES JOURNAL.—Legal Intervention in Arbitration; A Day in a Timber Merchant's Office; World Plywood Resources; Kiln Seasoning; Types of Kilns.

